

ROCKS and MINERALS

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Edited and Published by
PETER ZODAC

Nov.-Dec.
1949

Contents for November-December, 1949

CHIPS FROM THE QUARRY	562
THE CROTON POINT MORaine. BY CECIL H. KINDLE	563
RAMBLINGS OF A ROCKHOUND. BY R. F. HENLEY	569
A VISIT TO LOS LAMENTOS, MEXICO. BY LOUIS W. VANCE	570
TRIP TO RED TOP MT., WASH. BY C. H. ROBINSON, SR.	574
TAXABILITY OF MINERAL SUBSTANCES	579
TRIP TO MEXICO, PART 4. BY PETER ZODAC	580
OILMEN FIND A HIDDEN CRATER	592
A SOUVENIR OF COBALT	593
MY MINERAL ACTIVITIES FOR THE 1949 SEASON. BY E. LAWRENCE SAMPTER	594
NATIVE COPPER IN A N. J. QUARRY. BY T. ORCHARD LISLE	597
MOUNT ANTERO MINERAL PARK	598
AMERICA'S HARDEST GRANITE — A BIG HOLE — SPHALERITE AS GEMS	599
A STORY OF COPPER. BY EDWIN S. ROTH	600
BIBLIOGRAPHICAL NOTES	603
NORTH CAROLINA GOLD RUSH OF 1842. BY JEFF HILL	604
COMMENTS ON LIMONITIC "FULGURITES". BY HERBERT O. ALBRECHT	606
GIFT BAGS AT CONVENTION	607
SOME RECENT FINDS IN MAINE AND NEW HAMPSHIRE. BY D. M. SEAMAN	608
THE MIDWEST CONVENTION. BY JOHN F. MIHELIC	609
A NEW SOCIETY IS BORN. BY CLARK HARRISON	610
THE AMATEUR LAPIDARY. LAPIDARY NOTES BY J. HARRY HOWARD	612
CLUB AND SOCIETY NOTES	619
INDEX TO ADVERTISERS	670
GENERAL INDEX OF AUTHORS AND CONTENTS FOR 1949	671

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CHIPS FROM THE QUARRY

Christmas Greetings!

Happy New Year!

Again it is the happy duty of the Editor to extend to each and every one of our subscribers, advertisers, readers, and friends, a Merry Christmas and a Happy New Year, May 1950 prosper each and every one of you abundantly, socially, and financially is our sincere wish.

1950 MIDWEST-AMERICAN CONVENTION DATES

An important meeting of the Executive Committee of the Midwest Federation of Geological Societies was held September 30 and October 1, 1949 in Milwaukee, Wisconsin, with President Charles H. Preston, of Minneapolis, Minnesota, in the chair.

The sole agenda of the meeting, as stated in the beginning, was to make plans for the coming 1950 MIDWEST AMERICAN CONVENTION, which is to be held in Milwaukee, Wisconsin, with the Wisconsin Geological Society, of Milwaukee, serving as host, both to the Midwest and the American Federations.

Upon motion, Mr. James O. Montague, 1026 East Pleasant Street, of Milwaukee, Vice-President of the Midwest Federation, was made General Chairman of the Convention, with "power to act". Chairman Montague in making his preliminary report informed those present that the possible dates for holding the Convention in Milwaukee were contingent upon the dates available for securing the Milwaukee Public Auditorium, which is always booked up several years in advance, and that the only 1950 dates yet available were for the 4th week in June.

Fortunately these dates coincide well with the traditional ones of the American Federation and so June 28-29-30 (Wednesday thru Friday) were set for the 1950 Convention. This will allow Saturday and Sunday for the two day post-

convention Field trips which are planned.

On Saturday morning the committee made a tour of inspection, with the manager of the Milwaukee Auditorium, and all agreed that no finer accommodations could be found anywhere in the country for a convention of the type planned. Two great halls, the "Juneau" and the "Kilbourn", with a common foyer between them, were reserved by the committee, one for commercial exhibits and the other for non-commercial exhibits. In addition, numerous halls, both large and small, are available for meetings of all kinds, under the same roof. Contracts were closed for all these facilities which are most perfect and ideal.

Later a meeting was held with the Convention Bureau of the Association of Commerce, and the committee was assured of the full cooperation and facilities of this body, which will bend every effort towards making the Convention an outstanding success.

Many other details were discussed, concerning such things as committees to be set up, as well as the General Program of the Convention. The meeting was adjourned to meet again in Chicago on October 22, for further reports and the further perfection of the plans for the Convention.

Committee on Publicity
Mid-west-American Convention

REPRINTS AVAILABLE

There have been so many requests for reprints lately that the following bit of information may be of value. They can be supplied and at the following rates:

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100 copies	4 pages	7.25

100 copies	6 pages	10.25
100 copies	8 pages	12.75
100 copies	10 pages	15.00

All reprints must be ordered in advance, before the articles make their appearance in print.

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THE CROTON POINT MORAINE

By CECIL H. KINDLE

City College of New York

Evident to all travelers up the Hudson is the "delta of the Croton river" which extends far out in that wide expanse of water. To small boat men it offers shelter from strong winds and a choice of good overnight anchorages. To travelers by train it marks a ten minute halt while the locomotive is changed from electric power to steam or diesel when northbound and the reverse southbound. This delta is supposed to have been formed shortly after the ice sheet melted back at which time the body of water into which the Croton river flowed stood at a level about seventy feet higher than it now does.

To the casual observer on a sunny day up to smell the sulphurous locomotive smoke and dream of distant places the sands and gravels support this concept of Croton Point. This is the correct view to the learned bookworm also, for a railroad cut made about 1885 was carefully examined and written up by Charles B. Warring in the Transactions of the Vassar Brothers Institute of 1887. To any mariner the shape of Croton Point suggests differences in the material making up the point. Such is the mental inertia and conservatism of geologists, as exemplified by the writer, that no official notice has been taken of this difference in resistance to wave erosion. It is now two years since the writer acquired a small boat and first made cruises to Croton Point and beyond, and it is only this spring that his observations have finally compelled him to realize the peculiar shape of Croton Point has a more substantial explanation than the chance meanderings of the Croton river eroding its former delta.

Warring's Account

First let us see what Warring wrote in 1887 which forms the basis of the ac-

cepted view of Croton Point. We quote him:

"Just below Croton Landing, thirty-three miles from New York, is a remarkable point or spit of land nearly two miles in length, and separating Haverstraw Bay from Tappan Zee. It is noted for the excellence of its fruit and other productions, and especially for its superior grapes. The surface is almost level, bounded by wooded slopes, which are everywhere steep and in some parts almost perpendicular, as perpendicular as is possible for sand and clay to lie. I do not think there is any bed rock visible, at least I have seen none. The point is divided into two parts, separated by a morass now covered with salt meadow. From seventy feet above the water the surface descends very abruptly to its level. Crossing the morass, the land rises in the same manner nearly or quite to the same height. There is an island in the morass at the mouth of the passage through the point of about the same height as the rest, and the sides are equally steep.

"Through the neck of this spit of land the Hudson river railroad company has made a deep cutting. About two years ago they drew away many thousand yards of material for filling, and so removed the debris which had largely accumulated, and in fact they stripped the sides of the cutting bare from bottom to the top, thus revealing very beautifully its structure. . . . there are three divisions in the construction of the bank. The first and largest consists of layers of very fine sand, having in the bottom part of each (and nowhere else) considerable coarse gravel at the south end, and more or less all along, but finer as the distance is increased. These layers are sharply defined, ending abruptly as in the diagram. They

do not die out at either end but are fairly represented. Lying next above these is the second division, averaging four feet, and consisting of a dozen or so layers of uniform thickness, very regular and everywhere parallel to each other. Above this is another division of about the same thickness and parallel to it. It shows no trace of any layers but is homogenous throughout. The material of both the last divisions is very fine and was deposited in very still water.

"At the right of the large elevation will be noticed a smaller one. The upper divisions follow all the inequalities of the ground. . . .

"The point must have been several hundred feet under water, for these same layers can be traced upon the neighboring hills to that height. Everywhere they follow the inequalities of the surface, and so far as I have been able to observe, maintain nearly or quite the same thickness.

"Great quantities of the shells of the common oyster are scattered over the point, but never, so far as I could find, below the upper part of the topmost layers. I have been unable to find other organic remains.

"When did this occur?

"That the last emergence was very recent is evident because the slopes are so little worn.

"The point itself must have been the northern part of the delta of the Croton river.

"By one of those unaccountable freaks, so often manifested by rivers flowing through alluvial soil, the lower half of the delta has been swept away."

Observations By Boat

And now in our twenty foot cruiser let us run north with the incoming tide to Croton Point. It is a hot day, and almost midway up the west side of the point we see a beach with a swimming float. The map shows this to be a park and a cruiser from Red Bank, N. J., is anchored offshore while its crew enjoy the water. It looks inviting so we also swing our anchor over and swim ashore. The beach is littered with wave-worn bricks and fragments of bricks; wading is a little un-

pleasant. Soon an officer of the Westchester County Police informs us that this portion of Croton Point Park is reserved for groups of Westchester County boys for whom definite camping times have been reserved in advance. Cruisers have the privilege of anchoring and using the beach below the cliff east of the public bathing beach on the north side of the point.

There we find an ideal cruiser rendezvous; gently sloping bottom of clay silt; driftwood on the shore for beach fires; on the steep hill slope varved (banded) clayey silt in which the children love to climb, jump and dig. It is protected too from the common summer southern breeze. Forty or more cruisers not uncommonly spend the night there. If the breeze should come from the west we may move over close to the northwest point for protection. And in the morning some of us row the dinghy to the point while breakfast is cooking. There we land among huge boulders which have protected the point from wave erosion. Above these we see thick deposits of oystershells, left by the Indians who enjoyed this area before we came on the scene.

On another occasion we arrive at the beach when a moderate north wind sends large waves on the beach. Only one other cruiser is there to enjoy the swimming. It is fun in the water but the pitching of the boat makes eating out of the question. We head around the northwest point to seek shelter on the south side around Tellers Point. A bar of small boulders or cobbles extends south of Tellers Point and beneath the surface its continuation for a long distance is shown by ripples on the water as the ebb tide sweeps over it. So we continue far south of Tellers Point before heading east to cross the bar. Our boat draws less than two feet of water, yet we scrape on rocks, fortunately at low speed. As we change course to north to come up with the fleet of cruisers anchored close in shore east of Tellers Point a reluctant brain concedes that the concept of Croton Point as a delta leaves some things unexplained. As we anchor we note there are boulders on the shore at

the base of the hill. Perhaps they were rafted in by floating ice, we surmise, observing meanwhile that here as off the north beach there is a good mud bottom with no rocks to bother the anchor.

A Walk Along The Point

Time passes and the spring of 1949 finds the City College class in historical geology and stratigraphy customarily spending Saturdays in the field. For April 2nd it was requested that we have a short trip. We picked Croton Point for that day with the expectation that the students would get a chance to guess that the boulders near the two points were rafted there by floating ice and also to give them experience in measuring the height of a hill without instruments.

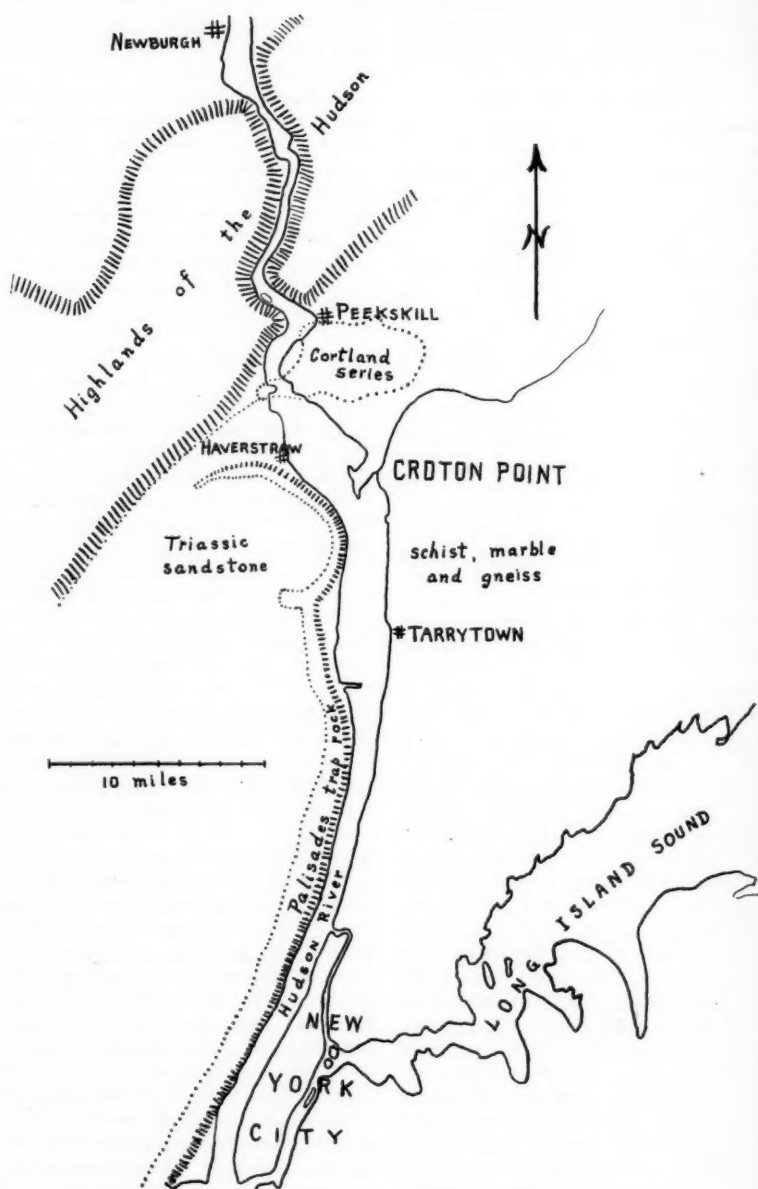
This latter we accomplished by descending the hill near the railroad roadhouse while taking the difference in elevation of our eyes above our feet as five feet. By this method we descended by that amount fourteen times going down to sea level and were agreeably surprised to find ourselves corroborating the map.

A few steps westward along the beach we came to a new exposure laid bare by storm waves. Extending to ten feet above tide was finely varved (banded) clay with about four or five varves per inch; above that was the fine sand with here and there a layer of gravel which Warring had described as making up the greater part of the railroad cut. And then the memory of the wave-worn bricks came back; there must be similar clay on the outer part of the point which was once used for brick manufacture! Jubilantly we walk a few hundred feet further to the exposure where the children had played the year before. It is at the same level as the varved clay but is a clayey silt rather than clay. Then we notice that it appears to be part of a former landslide and originally may have been at the top of the cliff. If so it probably represents Warring's second division of which he says in the explanation to his diagram: "... many well-defined layers running over the width of the cutting. In these is neither sand nor gravel. Apparently there was a succession of deposits in quiet water." It

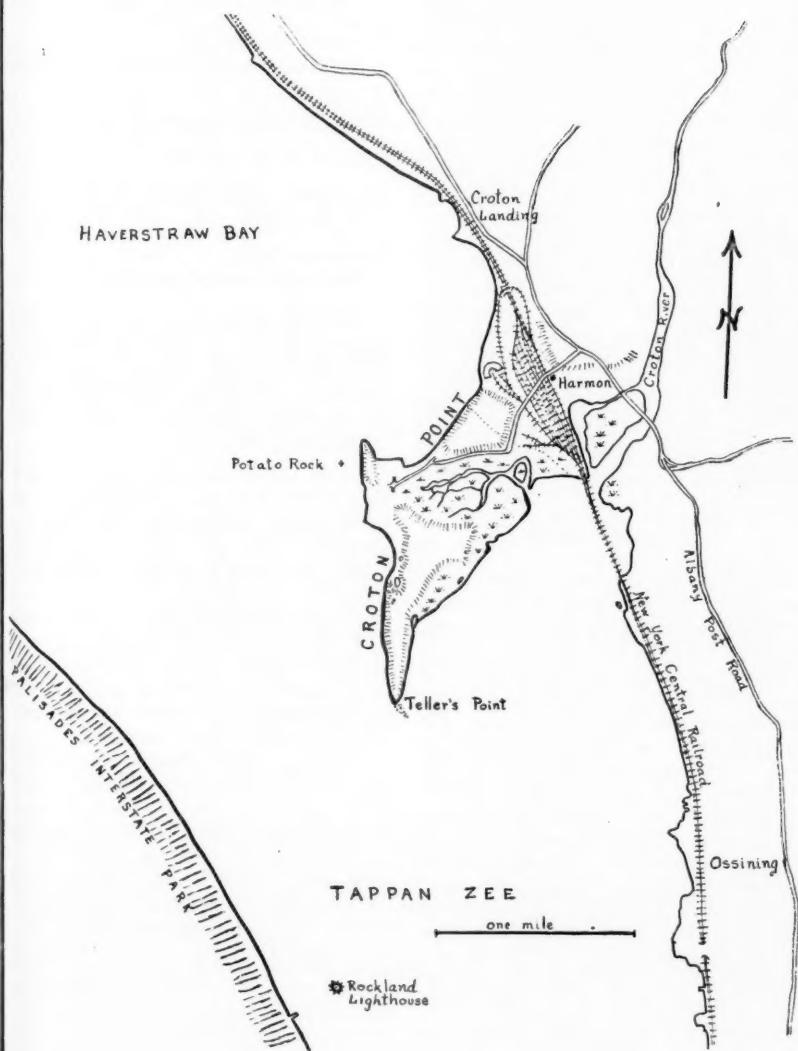
seems we have discovered that the delta deposits were deposited on top of varved clay and Warring had previously shown that these deposits were in turn overlain by varved clayey silts.

So the class proceeded along the beach to the lee side (of a west wind) of the hill at the northwest point. There those who had brought a lunch spied lunch tables and decided to go no further before eating. Those who climbed the hill above the lunch tables found a woodchuck hole near the top where fine sand and silt had been brought to the surface. Assuming it to be more delta deposits we proceeded down the west slope toward the Hudson. Here in the grass are a large number of boulders. Pointing out the power of floating ice to move heavy objects we move on to the wave-cut bank. To our surprise we find our recent explanation false. We are standing on glacial till. The boulders had been there before the delta was formed! And so, we have already seen, was the varved clay.

Fortunately the lack of ice this last winter has resulted in numerous wave-cut exposures along the west side of the point. As we walk the shore toward Tellers Point we first see varved clays exposed near the wave-worn brick locality. A little further on is an exposure of seven feet of glacial till followed by a foot of varved clay and that in turn overlain by sand and gravel. Four or five hundred feet further the till extends only three feet above water and has two feet of varved clay above it followed by sand. In another five hundred feet the till disappears below tide level and the clay thickens to four feet showing above tide and again it is overlain by sand. As we near the cove a quarter mile north of Tellers Point the glacial till reappears above sea level and the clay is not seen. At the cove the till rises twenty feet above the water. Teller's Point itself is entirely composed of glacial till, rising forty feet above sea level. Large boulders resulting from partial erosion of the glacial till are littered all along the shore where it outcrops. They are particularly numerous at Tellers Point and also at the northwestern point where the till rises thirty feet above sea level.



Map showing location of Croton Point, N. Y.



Map of Croton Point, N. Y.

Origin Of The Till

These glacial boulders are interesting and throw some light on the type of glacier that brought them. Large blocks of Triassic conglomerate are common. This rock occurs in place at the northern border of the Triassic sediments and could not have been brought more than five miles from its source. Even more common is a great variety of dark igneous rocks, obviously belonging to the Cortlandt series near Peekskill. Gneissic granite from the Highlands is also present. This assemblage of local rocks left in a moraine at a low level in the valley of the Hudson can best be explained as the product of a valley glacier which flowed through the Hudson gorge while the main ice sheet was held back by the Highlands. To judge by the direction of this moraine the ice tongue narrowed and ended not far south of Croton Point. Perhaps Rockland Light-house is built on a similar moraine on the western side of the valley.

Further Reflections

Well, on examination, Croton Point certainly turns out to be much more than a delta. What about the varved clays and the wave-worn bricks? Near that locality a number of ponds are found near the shore. They must have been clay pits that were in use long ago. It is strange that Warring made no mention of them in 1887. It is strange that Reeds in the International Geological Congress Guide-book (1933) says "varved glacial clays are not known to be exposed above sea level in the Lake Hudson basin south of Haverstraw" and also "sandy varves about one foot thick, observed on Croton Point in borings made near sea level, indicate late glacial age". It is strange because back in 1843 W. W. Mather in his report on the Geology of the First Geological District (New York) gave on page 143 a table of brick manufacture of the Hudson Valley which includes (with the number of bricks made annually):

Jesse Wood's yard,
2 miles above Teller's Point..6,000,000

Anderson's yard,
2 miles above Teller's Point..2,000,000
Frost & Doty's yard,
2 miles above Teller's Point..5,000,000
Wager & Hull's yard,
½ mile above Teller's Point..2,000,000
Hull's yard,
½ mile above Teller's Point..1,500,000
Yard on Teller's Point.....1,500,000
James and Samuel Wood's yard
at Tarrytown5,500,000
Appleton's yard,
three miles below Sing Sing.. 500,000

From this table it appears varved clays may be seen as far south as Tarrytown. Why did Reeds miss seeing them on Croton Point when they were his prime object of study? And how could he have missed the glacial till?

Let us not be too severe with Reeds. If we go to Croton Point Park this summer we will find ourselves barred from that portion where the old clay pits are located. He must have been similarly restricted. As for the glacial till, he wasn't interested primarily in that and if he saw it would have merely regarded it as a nuisance. Surely many other geologists have visited Croton Point and passed it by, the writer among them. By not noticing it, however, Reeds led himself astray in drawing a chart showing the melting back of the ice sheet in a series of parallel, more or less straight ice fronts. It stands to reason that tongues of ice must have extended far in front of the main ice sheet through the Hudson, Ramapo and similar valleys. The proof lays there on Croton Point awaiting recognition.

So come in the fall or, better yet, in the spring, when we may walk south along the west side of the point, the sun reflecting from the water as we inspect the variety of peridotites, arkoses, and other remnants of an ice tongue which once flowed through the Highlands fiord of the Hudson, even as similar ice tongues flow through fiords from the central ice sheet of Greenland today.

RAMBLINGS OF A ROCKHOUND

By R. F. HENLEY

4075 19th Street, San Francisco 14, Calif.

At the joint convention of California and American Federations of Mineral Societies at Sacramento, Cal., June 24-25 and 26, 1949, I had the good fortune to make friends with Mr. and Mrs. E. J. McCollum of Klamath Falls, Oregon. When I mentioned to them that I intended to visit my sisters in Portland, Oregon, in August they said, "stop over with us a few days on the way." Did I? I DID!

I recently read in a mineral magazine that there are no collecting areas close to Klamath Falls but they have one right at the edge of town. We first made a trip to Lakeview, about 98 miles east of Klamath Falls, looking for an agate bed but failed to find it. So Mrs. McCollum said, "Why not take him to that ledge just north of town?" As we drove out there through what looked to be the newest and best residential district, I saw a drilling rig digging a well with a churn drill in someone's front lawn. Mr. McCollum explained that there is an underground body of hot water and that several neighbors join in the drilling of a well into which they sink a series of pipes and circulate water from the city mains and heat their homes with hot water. I have recently been told that most of the town, including office buildings and post office, is heated from this underground lake.

Just beyond this and outside the city

limits on a barren hillside is an outcrop of what I took to be very colorful opalite and undoubtedly very old.

I secured a small supply of it and on returning to San Francisco took samples of it to the State Division of Mines and they located for me an article by John Melhase in the *Mineralogist*, November, 1938, pages 26 & 27 about this very outcrop. He describes it as "a large and unusual occurrence of common opal" built up by a geyser in the Tertiary period, which proves that you do not always have to make an all-day drive to secure good specimens. Two years ago while visiting in Minneapolis my friends took me out several times to look for those so-called Lake Superior agates but we stopped at the first gravel pit we came to outside of town and started hunting. I even crawled under a barbed wire fence into a newly plowed field and picked up the largest agate I secured on the trip.

After traveling thousands of miles on various rock excursions I learned that only 15 miles from home and right on San Francisco bay shore and within the city limits of Burlingame there is a ledge of brecciated jasper and although much fractured as jasper usually is, it is possible to select fragments that make nice cabochons. The close to home locations should not be overlooked.



The opal ledge just north of Klamath Falls, Oregon.

Photo courtesy of Mrs. E. J. McCollum

A VISIT TO LOS LAMENTOS, MEXICO

By LOUIS W. VANCE

1002 Palm Avenue, South Pasadena, Calif.

Back in Chihuahua after our trip to Durango (ROCKS AND MINERALS, July-August, 1949, pp. 368-371) and Zacatecas (ROCKS AND MINERALS, Sept.-Oct., 1949, pp. 455-457) Earl Calvert and I busied ourselves preparing for the long-planned visit to the Ahumada Mine at Los Lamentos. This mine is justly celebrated for the spectacular Wulfenite it has produced. A large share of this material now found in collections was collected by Earl Calvert and Wendell Stewart, who have made several trips there.

We spent a day and a half getting the car out of storage and serviced, repacking and checking our equipment. The offices of the company controlling the mine were visited where we discovered the mine was not working and only a caretaker was there. We were given a letter to the caretaker which authorized our collecting.

Driving to Villa Ahumada we looked up Senor Gomez, a friend and guide of Earl's on former trips, who was to be our guide also. He was away working and his daughter, a cute kid of about 10, guided us to him. After arranging to get started at 5 p.m., we took his daughter home. We drove slowly down the main street of the town and she sat up very straight, obviously thrilled to death. I suppose that ride of a few blocks gave her something to boast about for quite a while.

At 5 o'clock we picked up Gomez and after loading 10 gallons of water and getting a couple of sticks of dynamite, just in case, we headed east toward Sierra de Los Lamentos, 50 miles away. The ungraded dirt road was crossed by numerous deep, narrow gullies which made the going slow. We dipped into these with brakes set, bumped slowly across and climbed out in low gear. Other portions of the road were not bad.

We presented our letter to the caretaker about 8:30 p.m. and were assigned quarters in an adobe building where we tossed our sleeping bags on the cement

floor, set up the stove and prepared dinner. Our room, about 12x14 feet, had been an office when the mine was operating. It contained a desk, 3 chairs and a large iron safe. Spindles on the wall still held reports, invoices, etc. This is about the only habitable building in what once was quite a settlement. Wood is so very scarce in this part of the country that none is allowed to go to waste and upon abandonment of the town the roof beams were removed. Left unprotected, the adobe walls soon disintegrate.

Earl tells that upon an earlier visit when the mine was going full blast the village of Los Lamentos was a little oasis in the desert. Water from the mine was used to irrigate corn fields and gardens. Now all is desolation, the buildings in ruins and the fields now taken over by sage and other desert growth.

Sierra de Los Lamentos is a range of limestone mountains rising for 2000 feet above the plain. The limestone is characterized by an extensive system of connecting caverns. At certain times the wind blowing through these caves produces a low moaning sound which rises and falls much like the lamentations of a church congregation, hence the name—The Lamentors.

The ore body of Ahumada Mine is a replacement deposit in Cretaceous limestone. T. A. Rickard, writing in *Engineering and Mining Journal Press*, Sept. 1924, Vol. 118, Says: "The ore bodies in Ahumada Mine originated from the replacement of the limestone by the sulphides of lead, zinc and iron. The mineralizing solutions were ascending at the time when they changed the rock into ore at certain favorable places as determined by the intersection of the main system of fissures, along which the waters or solutions found their way, with subordinate fissures in one or more beds of limestone that happened to be easily soluble. Later, in consequence of a change in the physical conditions, the underground circulation was reversed, so that the ground water descended, and

coming in contact with the masses of sulphide ore oxidized them, altering them otherwise also, and removed their soluble parts. Nearly all the zinc was removed *** most of the iron was removed likewise, but enough remains as oxide to please the metallurgist; the lead remained chiefly as the insoluble sulphate (Anglesite) but some carbonate (Cerussite) also survives. The silver clings to the lead. To these is added the Gypsum formed by the action (upon the limestone) of the sulphuric acid produced by the decomposition of the original sulphides. The leaching of the limestone that accompanied the decomposition of the primary ore *** has enlarged the spaces occupied formerly by the orebodies and has left the caves so characteristic of the Ahumada Mine."

The limestone was so fissured that it was more than a joke when it was said that early miners prospected with a cigaret. The miner lighted a cigaret and watched for the fissure into which the smoke disappeared. A shot or two along this crack often opened into another large cavern where, perhaps, ore worth many thousands of dollars would be found. Due to the fissures the air circulation in the mine is very good. At the 800 level more than 3000 feet from the portal we found the air fresh and good and but little warmer than on the surface. The ore is oxidized to considerable depth. An early visitor tells of seeing 40 carloads of finely crystallized Wulfenite on the way to the smelter. All of this was from below the 800 level, now under water.

Water problems and the depressed price of lead were responsible for cessation of mining. Large quantities of water were encountered below the 800 level and pumping did little to control it as it soon found its way back through the porous limestone.

We were up bright and early and with our guide, Gomez, and the caretaker, Gregorio, entered the mine. The way led through a horizontal tunnel for 1500 feet to a point where it intersected an inclined tunnel and then down this incline for 3000 feet. The incline dips at first at 14 degrees for a few hundred feet and then

at 22 degrees the balance of the way. At regular intervals ore chutes from the caverns above were encountered. At about 600 level we left the incline and followed a steep trail over waste rock through old, partially filled stopes to the 800 level, just above the water. We made headquarters in an immense stope which could have accommodated a large building with room to spare.

There was Wulfenite everywhere but not very good. Either the crystals were small or badly stained by the red iron oxide so plentiful here. While prospecting around, Gomez came to me and with the most innocent expression proffered a specimen of very ordinary Wulfenite, asking, "Is this good?" I looked it over carefully and hesitated to tell him it was not very good. Finally I took it and upon turning it over I found that the other side was a superb specimen. My expression sent him into gales of laughter.



The author (left) and guide, Gomez, in front of our quarters. Gomez is holding a fine specimen of orange-colored wulfenite on white calcite.

I later found that he is one of the very few Mexican miners who know what constitutes a specimen. He is intelligent and good humored and always alert to anything that will produce a laugh. He is a good worker and while not a large man, is tremendously strong.

Gomez soon located some good Wulfenite in a narrow fissure in a solid, compact limestone. We succeeded in getting a few specimens but found the going tough with our hand tools. Making little headway here we prospected around and found a small stope which contained lots of Wulfenite but all coated thickly with drusy brown Vanadinite. It was all over the place—it was impossible to move without walking on it. We collected a few of the better specimens as it is not very spectacular. (Having seen what is here we are getting choosy). Some of it is quite interesting, however, the Wulfenite having been leached until it is paper-thin, leaving the Vanadinite coating as a cast showing the original size of the Wulfenite. Some think that the Vanadinite received at least a part of its lead from leaching the Wulfenite.

Time to go to the surface arrived all too soon and about 3 p.m., with our bags full, we started out. Climbing up the trail through the old stopes was strenuous and by the time we reached the incline we were perspiring freely and I was puffing like a locomotive, so we rested a few minutes. There was a strong draft of cool air moving down the incline as we started out briskly. After a bit I was forced to slow down and long before reaching the surface I was counting my steps and stopping for a few seconds at the end of each 25 to let my lungs catch up. That is by far the longest five-eighths of a mile I have ever walked. Try walking up a 22 degree slope with a bag full of lead minerals on your back after a hard day's work and you'll see what I mean. It's like walking up stairs without any stairs. The miners didn't seem to mind but went steadily along. They say that they regularly climbed out in 20 minutes carrying a full load. It took us an hour.

Upon arrival below ground the second day we sent the Mexicans to blast in

the hope that we could open up the seam of good Wulfenite so we could get at it. In the meantime Earl and I prowled around, occasionally finding a specimen that seemed worth while. Shortly the blast was heard and after waiting a short time for the air to clear we went to take a look. It was a very sad sight. The shot had opened up the fissure all right but it also had shaken nearly all the crystals off the rock. Careful search salvaged a few specimens and hundreds of broken crystals were scattered about. These were cubes of a beautiful orange yellow color measuring from three-fourths to a full inch on an edge.

While we were eating lunch Earl questioned Gomez as to where they had worked on a former visit. Gomez replied, "Right here." So Earl got up and started working between an immense rock and the wall. I went over to help him but as there was not room for the two of us I moved around the rock in order to give him the benefit of my light. Earl was lying on his stomach, head down at a steep angle working at a crack in the rock at the base of the wall. His position was quite uncomfortable as the loose rock he was lying on had sharp edges which gouged unmercifully. After prying several slabs of rock off without seeing any indications he was becoming discouraged when I happened to move my light a bit and the beam fell upon a narrow crack and as Earl worked it opened up a little and I could see good crystals there. I kept encouraging him and finally being unable to see what I saw, he said: "How about you coming in and giving it a try?" So he backed out and I crawled in.

I had worked perhaps 5 minutes when I moved a big slab and what a sight was there. I let out a whoop, shouting: "Earl, we have hit the jackpot." He crawled in beside me, took a look, and said: "I believe you are right, but what are you leaving this here for?" Whereupon he reached in and picked up a superb specimen about 10x10 and thickly coated with large Wulfenite of good color.

We sat looking into a cavity a yard wide by a yard high and almost as deep. Everything we could see was thickly

coated by large yellow Wulfenite crystals. This cavity was apparently part of an ancient solution channel which had become filled with rubble and then Wulfenite had crystallized over everything. It was just a matter of reaching in and picking up good specimens with a minimum of work. Occasionally we had to pry a little where Wulfenite had cemented two pieces together. We soon had all we could hope to carry so knocked off and rested prior to the killing climb to the surface.

While Earl and I were working here, Gregorio had disappeared for a while. He returned with four large specimens of excellently crystallized Descloizite. We were so enamored of the beautiful Wulfenite that we gave anything less spectacular scant attention. In looking back I wish we had taken a few minutes to investigate as this Descloizite is very good.

The climb to the surface was even worse than before due to our heavier loads and we reached our quarters practically exhausted.

Our third day was spent working the same pocket until we were warned to either quit or do some timbering, so we had to quit. We did find another small seam nearby where we found some pyramidal Wulfenite. The smaller crystals are needle-sharp but as they increase in size they become more blunt until the larger ones are the usual cubic type. The cubes look like pieces of caramel candy sitting on the rock.

As this was our last day and we had far more than we could carry we sorted the specimens carefully, taking only the very best. So about 3 p.m. we started out. (I have not yet found any way to keep a Mexican miner below ground after 3 o'clock, their usual quitting time.)

We had very big loads and the going was slow climbing over the big boulders in the stope fill. As I did not want to risk a broken ankle at this stage, I refused to jump lightly off the big rocks. I sat down and slid cautiously off until I had a firm footing. This gave Gregorio, who was behind me, a lot of fun. Each time I did this I could hear him laughing heartily. That was all right with me.

Upon reaching the incline we had a

short rest and then started the long climb. It was much worse than before, in fact I staggered rather than walked. The Mexicans went right along and were soon out of sight. After what seemed years of wearily placing one foot before the other we saw their lights way off in the upper distance. They had been out and shed their loads and were coming back to help us. When they relieved us of our bags we were only about half way up the incline.

We finally made it and spent the rest of the afternoon sitting in the bright sunshine packing our specimens. As we looked at each other we burst out laughing. We were a sight. Referring to my diary I find the following:

"We leave early in the morning and I hope we will be able to get a bath soon. The three days in the mine have coated us from head to foot with the red iron oxide. I am red headed for the first time in my life. Our clothes are stained and torn and I am using a piece of rope in lieu of suspenders. We will throw away the clothes we wore and I am not sure we shouldn't throw ourselves away too."

As our guide was anxious to get back to his job we said goodbye to Los Lamentos at 7 a.m. and three hours later were in Villa Ahumada where we bid farewell to Gomez, a swell guy, with much hugging and back-slapping. We then headed for Juarez and crossed the border into El Paso, Texas, at 2 p.m.

A hot shower took off some of the dirt and revealed sundry cuts and bruises. But as the red iron oxide of Los Lamentos disappeared down the drain it took with it all the weariness of a long, hard trip and left us elated at our success and busily planning our next expedition.

(EDITOR'S NOTE: Los Lamentos is in the northern part of the State of Chihuahua, Mexico.)

Uranium Minerals Safe To Handle

Due to the publicity given atomic bombs, many collectors are adding uranium minerals to their collections. Some beginners are hesitant in buying such minerals because they fear it is dangerous to handle them with bare hands.

Uranium ores and minerals are safe to handle—just as safe as any ordinary mineral in a collection.

TRIP TO RED TOP MT., WASH.

By C. H. ROBINSON, SR.

623 1/2 16th Street, Puyallup, Wash.

Mindful that several very interesting articles have been written in the past few years regarding Red Top Mountain, blue agate locality of central Washington (Kittitas County) and that much more remains to be told or explained beyond my knowledge on my first and only field trip thus far to the locality on Oct. 17th and 18th, 1948, however, trusting that the readers may glean some food for thought, as one rockhound to another might discuss subjects, I herewith present this article.

I have found members of the various rock clubs here in the Pacific Northwest so very cooperative that regular meeting dates are set so as not to conflict. Many members like myself belong to two or three rock clubs, hence I am using kodak views furnished me by members of the Tenino Rock Cruisers of Tenino, Wash., also by members of the Tacoma Agate Club to illustrate this article. I belong to both of these very active Clubs, also to the new Club recently organized — Puyallup Valley Gem and Mineral Society.

On Oct. 17th and 18th, 1948, two rockhounds and I of the new Puyallup Club took advantage of two most beautiful clear and cool days and one night during the full moon to make a field trip to the blue agate beds of Red Top Mountain high up in the Cascade Mountains. The locality is not far from the university town of Ellensburg, Wash., if you are driving from the east, or Cle Elum if coming from the west. Red Top is 127 miles east of Puyallup and reached by very good highway. One should stop first at Liberty Forest Ranger Station to get necessary information or fire permit to enter this National Forest Reserve, Teanaway Ridge on Red Top, or use the free camp grounds at Mineral Springs which is provided with a number of good stone fireplaces, grates and cast iron stove tops for cooking, large number of heavy rustic tables, benches, etc, pure and also the mineral water (from which the camp derives its name).

All parts of the great Wenatchee National Forest Reserve on Red Top Mountain is for the people to enjoy. Mineral Springs camp grounds are adjacent to the Blewett Pass highway at the foot of Red Top Mountain.

My two friends (good rockhounds) on this field trip were Mr. Leonard Runyan (owner of the car) and Mr. Foster Harlan. We left my home in Puyallup after a hearty breakfast at 6:00 a.m., Oct. 17th, having previously loaded Mr. Runyan's car with camp equipment the evening before. We left by way of the valley to the north, turned eastward at Renton through North Bend and over Snoqualmie Pass (a most scenic route). Then down the east side, passing through Cle Elum turning left on the Blewett Pass highway stopping at Liberty Forest Ranger Station on way to Mineral Springs. A rather interesting sight as you drive along the highway which follows Swauk Creek for some distance where some years ago were located gold placer diggings, in fact one of the old abandoned gold dredges may be seen for some distance amidst the rock piles.

Reaching Mineral Springs Camp it is but a short distance up the main highway where you enter the trail or fire road; if weather and road conditions are good one may drive his car up this rather steep, crooked road to its end, about 3 miles up (plenty of space to park) then hit the foot trail which is a good zigzag trail about 2 miles long from where you park the car to top of Teanaway Ridge. Elevation 5200 feet above sea level but the climb is well worth the effort as the scenic beauty on a clear day cannot be adequately described. The trail is lined with timber all the way up among them being fir, pine, and hemlock; these trees thin out at top of ridge which is nearly flat on top. A castle-like pinnacle rises near here which is about one-fourth mile wide and three or four hundred feet high. Perched on top of this pinnacle is the Wenatchee Forest Ranger lookout

station of Red Top Mt. Should you wish to visit the station, it can be reached by a $\frac{1}{4}$ mile hike to the tower. I might add that this zigzag trail, although steep, is kept in very good condition and safe throughout its entire 5 miles from the highway. It has also some good markers.

— signs like this as you near the top:—

Wenatchee National Forest

Teanaway Ridge Trail

Liberty Ranger Station 8 miles →

Blewett Pass Highway $4\frac{1}{2}$ miles

Baker Creek Trail 3 miles →

Blue Creek Trail $\frac{1}{2}$ mile

← Red Top $\frac{1}{2}$ mile

Shortly after passing this sign (Red Top) you emerge from a dense forest out on a great expanse of almost level flat top which extends for a mile or more. The top is almost but not quite barren of trees, as you can see by the pictures and is from 300 to 500 feet wide. Over much of this ridge decayed basalt has weathered out trapping in this accumulation of *Soil in the making* rocks and other debris over a great period of time. The amygdulæ (agates) now lie buried on Teanaway Ridge or found mixed on either side on the slopes or rocky talus slides below — you may judge for yourself. A view of the illustrations may bring out the fact that it is not necessary to dig very deep to secure agates — more than anyone can carry down the long trail — in a comparatively short time.

Let us now take a look over Red Top Mountain and try to find out some of the hidden secrets, so to speak. I did just that while my two colleagues busied themselves by digging up far more agate nodules than they could possibly pack down the trail, for this location is strictly a one day round trip set-up. So I dug a little then prospected various zones for a mile or more, collecting various rock specimens that represented a fair cross-section to study later, also making notes. I will now try to present for your interest or criticisms my findings.

Let us first touch on some of the high lights of such a field trip at this time of the year. We had arrived by 11: a.m. It was a most delightful clear cool day

and we all enjoyed the scenic grandeur. Noon day lunch over, each pursued various digging spots of ones choice. I noticed that my friend Leonard, a powerful big man, was digging out nodules so fast he had about a bushel or more to sort over while Foster, who usually comes out with the choicest specimens no matter what field we are searching, was also having very good luck even if he was digging minus his shirt thus allowing Old Sol to penetrate his bare back. I kept my shirt on and just walked all over that prolific field of agate where hundreds of broken pieces lay strewn around. The nodules were mostly quartz crystal lined geodes — all of which would have been carried off if they had been found in a more accessible location. Just what an Easterner would do amid such a find I cannot predict but I have a pretty good idea. Never in my years in the eastern part of the U.S.A. did I ever see anything like this agate field of the west!

Here on Red Top Mt. the agates sought are the so-called "blue agate" and of course all are looking for the rarer cornflower blue agate which are solid, with no crystals, hence the geode discards. Possibly less than 50% of all the geodes dug up are packed down the long trail.

About 5:00 p.m. we three shouldered our packs, hit the trail and reached the car without incident, tired but happy. Leonard quickly drove down the 3 miles over the emergency fire road and inside beautiful Mineral Springs free camp grounds provided by our good old Uncle Sam for you and me to enjoy. Here Leonard prepared a very good hot meal, using the stone fireplace which had iron grates and cast iron stove top to cook on, while Foster and I put up the sleeping quarters for the night's lodging which consisted of a 12'x24' heavy canvas over a tightly stretched rope between two trees over which the canvas was thrown, pegging down the four corners with front and back ends open to the stars and full moon. An army cot for each, with blankets, completed our sleeping quarters. By the time Foster and I had completed our job, Leonard was calling "Come and

get it" and we did. And doesn't food out in the open after a strenuous day's work up and down Red Top Mt. give you an appetite! Supper over and dishes put away, we all sat down around a big camp fire telling tales, talking of the day's collecting, and otherwise amusing ourselves until bedtime. Then we crawled into our sleeping bags and were soon lulled into peaceful slumber by Medicine Creek, a mountain stream that borders the camp grounds on one side as it rushes over its rocky bed. I was awakened by an unusual sound (may have been Leonard snoring). I thought it was day break—so clear and light it was—and not until I saw the full moon did I realize my error—it was only a little past midnight. Anyway we were all up early on the morning of Oct. 18th, 1948, to find $\frac{3}{8}$ inch of ice but that only made us all pep up and soon Leonard had breakfast prepared while Foster and I took down and stored in the car our sleeping equipment. How good does the bacon, eggs and coffee smell out in the open air! And how we did eat! Leonard had also prepared bacon and egg sandwiches for our midday lunch which we supplemented with chocolate bars for extra steam in mountain climbing.

After registering in the Forest Ranger's guest book at Mineral Springs Camp, we

left for Red Top taking the same route as described the day before—up to end of fire road by car then hiking the zigzag trail to top, stopping here and there to inspect rocks or to admire the fine scenery. Our car reached the top in about one hour but descending it will require a little more time than on the upgrade. The weather again was clear cool and delightful. I pursued my prospecting, realizing how little mere man actually knows about the wonders of God's creation as I viewed from Red Top Mt. His handiwork spread out in the wonderful set-up of these Cascade Mountains with towering peaks like majestic Mt. Rainier and others seen from this vantage point. The magnitude and grandeur is so inspiring and impressive that it causes one to ponder! Why all this conflict in the world of today's "man's inhumanity to man" when if we would "Stop, look and listen" Old Mother Nature could teach us vain mortals very much indeed! A "Sermon on the Mount", so to speak. I am sure a field trip to Red Top Mt. and its panoramic view will impress anyone who can make it.

Now for the closing chapter. Leonard, Foster and I did much the same day as on the day before and we enjoyed every minute of it. With full packs, we hit the "Long long trail awinding", reached the



Tenino Rock Cruisers collecting agate on Red Top Mt., Wash. Note the treeless terrain.

car tired but happy, loaded the spoils of the day in the car, and Leonard was soon driving us homeward. We stopped in Cle Elum for supper, went over Snoqualmie Pass by moonlight, and reached my home in Puyallup by 9:00 p.m., Oct. 18th, 1948.

Here are some of my deductions based on observations and rocks collected on this two day field trip to Red Top Mt. My opinion of Teanaway Ridge is that it represents a long fissure where molten rock magma flowed out, this opening forced up, of course, by pressure from below—hence this long ridge of basalt lava evident on all sides here as elsewhere in the adjoining states where may be found one of the greatest lava flows in the world. This great lava flow covers some 200,000 square miles and embraces some 20 or more volcanic peaks like Mt. Rainier, Adams, St. Helens, Baker, Hood, etc.

Assuming this is all a well-known fact, let us try to find out what the so-called blue agates looked like in the beginning. Assuming the slowly moving lava flow, cool enough (but still bright red hot) and stiff enough to almost stop moving. As it crystallizes out, water that was held in solution is given off but as the lava is

still red hot the water is of course in the form of steam and bubbles are formed. As the lava still moves a little the bubbles are pulled into a somewhat elongated shape with the small end down stream. After the lava cools, water this time liquid but possibly pretty warm, oozes through the rocks (lava) into the steam holes. The water carries in solution mineral matter that it has picked up in the rock and in the case of agates from Red Top Mt., mineral matter formed crystals on the wall of the steam holes and several of the agates I collected on Red Top had crystals which seemed to have been zeolites, in others they formed little hemispheres that were probably made up of crystals of ankerite, a mixture of iron, magnesium and calcium carbonates in which the three elements may vary in almost any proportion. Now remember that the crystals formed while the steam holes contained only water. Then probably as the lava became somewhat cooler, the water deposited silica in the form of chalcedony over the walls of the steam holes and over the crystals that had already formed. After the deposition of more or less chalcedony, probably when the lava had gotten considerably cooler, the silica deposited as quartz crystals until



Tacoma Agate Club's field trip to Red Top Mt., Wash.

it filled the vug or the water stopped flowing. Then after a long period of time the lava decayed and the amygdules were left behind but the crystals of zeolites, calcite, ankerite decayed like the lava and left only their (fingerprints) cast holes which you now see in the amygdules. If this description of how the peculiar shaped holes were formed sounds logical let us try another as there seems to be so much misconception of how Old Mother Nature produced these casts in the amygdule agates found in so many localities here in the West. Many of these casts have peculiar shaped indentations showing angular or circular forms below the regular contour lines of the agate. Let us imaginarily assume we are going to reconstruct one of these amygdule agates. Then let Father Time take over. Suppose the room you are sitting in is a vug, a steam bubble in lava. When the first hot or very warm water fills it, the ceiling, walls and floor may have a coating of small ankerite crystals deposited over them like frost. Besides the fine coating, over in that right front corner may be a mass of large crystals formed from the same warm waters. Over to your left is a fairly large single well terminated crystal and on the wall behind you a radial mass of crystals forms a round lump like half a baseball or a football. Now the solutions change. The crystals that have been formed are of rather complex minerals but now the waters bring in silica, SiO_2 , a simple mineral that does not break down under weathering and is very insoluble and this fills the whole room covering the frosty and massive minerals and including them in its bulk. In time the walls of your room (the lava) decay and turn into clay, iron and magnesium compounds which wash away with its decay those complex minerals that were formed first, leaving only the silica, SiO_2 , filling the amygdule.

Now for the latest discovery in so far as I know or have been able to ascertain from professional geologists or the best posted amateur rockhounds of any of our western club members familiar with Red Top locality who have convinced

me that a part of my deductions based upon certain observations were correct. Teanaway Ridge was the result of a fissure flow of lava. This may be of little interest to those seeking agates only, but it is of great importance to others, like myself, who may be seeking knowledge from Grand Old Mother Nature. Even tho Old Father Time raises havoc in general and often locks up his secrets against man's quest for knowledge as in one case at Red Top where hundreds have walked over but did not recognize it. I was therefore much pleased when I discovered, directly under the big castle-like rock upon which the Ranger lookout station is located on top of Red Top, several specimens in the talus slide below of devitrified obsidian together with contact lava and volcanic glass (obsidian) also specimens of lava cinder or top of lava flow. Just why the finding of this very old obsidian is of importance is due to the fact of its absence in the State of Washington when compared with its abundance in Oregon and other western states. The interesting part concerning my field trips in various parts of Washington I never found but one locality where obsidian could be secured and that was 15 miles north of Sunnyside, Wash., where it was found in the form of "Apache tears". This name comes from the legend of the mythical Indian maiden who at the death of her lover shed tears that petrified or turned into stone—as black marble-size stones. "Apache tears" are black obsidian which have weathered out of its perlite matrix. Both finds of obsidian indicated to me that a great period of time had elapsed since some of the Washington State lava field flowed as compared with the more recent and abundant lava flows of Oregon (near Bend, Glass Butte, etc.) where great piles of obsidian chips, spalls and cores may be seen where the arrow maker wrought out his artifacts in great numbers to be used, traded or cached; much material from such a locality found its way up and down the great Columbia River which no doubt was the route of much travel and exchange with plenty of good evidence now to be seen in many private collec-

tions. My good friend, Adam H. East, Archaeologist of Wenatchee, Wash., has over 6 tons of such artifacts in his collection and which I would like to see the State of Washington safeguard in the State Museum before it is too late as never again can such a collection be gotten together or duplicated.

So much for the story of valcanic glass (obsidian), its source and use by aboriginal man. I have been collecting specimens of obsidian for the past 60 years and have some devitrified obsidian in my collection that would be hard to recognize as volcanic glass by even some good geologist. So it is not strange that the average rockhound has been walking over it.

Last November I had the pleasure of meeting Dr. Sheldon Glover, State Geologist and head Division of Mines, Olympia, Wash. In our conversation I asked Dr. Glover where flows of black or black and red obsidian could be found in this state. He told me he knew of but three localities—one was up near Mt. Baker in the northern part of the state, another to the southwest, etc. I was pleased to

learn how scarce it was in this state. As stated I take it that Old Father Time has been responsible for certain metamorphic, chemical, and physical changes in order to make us amateur geologists hunt for the real facts.

In closing I desire to say that a hobby along the lines of this article is one of the promoters of good will, good health and happiness. Anyone can take it up. Even a physically handicapped person need not stop if really interested, it will contribute to better health and most likely to longevity. Such a hobby is open to all no matter in what walks of life he pursues, creed or color. The rapidly growing interest in these non-profit rock and mineral clubs and societies all over this country indicate their rapidly growing interest and value. I have ridden this grand hobby of rockhounding for 60 years. I attribute my good health to my keen interest and outdoor activity even though my present age is about 7 years over the allotted 3 score and 10. What a wonderful world God has wrought in order to teach us mortals certain facts!

TAXABILITY OF MINERAL SUBSTANCES

The attention of the Bureau has been called to the fact that there appears to be some controversy regarding the taxability of mineral substances under section 2400 of the Internal Revenue Code.

The tax imposed by section 2400 of the Code attaches to the sale at retail of all precious or semi-precious stones regardless of whether they are real or imitations, cut or uncut, whether drilled, mounted or matched, and whether temporarily or permanently strung or whether with or without clasps.

It has been the consistent policy of the Bureau to hold that all varieties of stones used for ornamental purposes and having a Mohs' scale hardness of six or more are precious or semi-precious stones within the meaning of the above-mentioned sec-

tion of the Code. However, no tax attaches to the sale of mineral substances such as diamonds, rock crystals, garnets and hematite which are sold for research, educational or industrial purposes where no ornamental purpose is involved such as mineral hardness testing, polishing, cutting, and grinding. The sale of such a stone for use as a display specimen in a museum or elsewhere is considered to be the sale at retail of the stone and is, therefore, subject to tax irrespective of whether it is cut or uncut.

Charles J. Valaer,

Deputy Commissioner of Internal Revenue, U.S. Treasury Department.

Sept. 7, 1949.

TRIP TO MEXICO — (Part 4)

By PETER ZODAC

Editor, Rocks and Minerals

15 DAY

(Sun. April 25, 1948)

It was a beautiful morning in Mexico City and being Sunday it was my duty to go to church. Inquiry of the night before revealed that a church was only 3 blocks away from the Shirley Courts (where I was staying) so I hiked to it for the 7:00 a.m. Mass. I had visions of a large and most beautiful church (possibly a Cathedral) but to my disappointment it turned out to be a plain and unattractive wooden building. I passed the building, in fact, and only on retracing my steps and then noticing the number of people entering did it dawn on me that it must be the church. And was it crowded! Why sardines in a can would have been jealous if they could have seen how the people packed into that church! Never in my life did I see so many people crowd into a building as they did that morning into the Iglesia de la Virgen Perpetue Socorro (Virgin of Perpetual Help).

Back at the Shirley Courts, I took time out to inspect them as we had arrived late the night before. The Courts had an attractive lay-out—office, restaurant, garage, beautiful cabins (with showers), and a most delightful patio and all surrounded by a high wall. It was run by Americans and all employees spoke English. I strolled to the garage where about a dozen cars were parked and all carried U.S. license plates. There were cars from California, Illinois, Texas, Virginia and ours from Michigan. I looked in vain for a New York car and if one had been present I would have made an effort to meet the owner and try to go back with him, were he returning within a day or so. When I left Peekskill, N. Y., 15 days ago to attend the big mineral show at Austin, Texas, on April 17-18, my plans were to return home immediately after the event was over. But like many plans, mine went astray and here I was down in Mexico City with Don Gabriel, of Detroit, Mich. Don is such a nice fellow that it did not

require much coaxing to go down into Mexico with him. He is one of the most agreeable persons I ever went out with so that the trip was a most enjoyable one. It was the worry that the next issue of ROCKS AND MINERALS would be unusually delayed that bothered me.

To one side of the large patio a small trench had been dug and spotting it I went over to investigate some of the excavated rock. The rock was basalt and contained tiny greenish grains of olivine, so a small sample was taken as a specimen from Mexico City.

Just as I was entering our cabin (No. 57), the door of the cabin across the way opened and unconsciously I turned around to see who was coming out. It was a young woman and—we both yelled with delight in greeting. We had met before, if only for a few seconds, at Hotel Fundacion in Zimapan, 3 days ago, where she, her husband, and little boy, had also spent the night. They were from Illinois but I never learned their names. We chatted for a few minutes. She was highly enthusiastic over some Aztec pyramids and beautiful churches she had seen and tomorrow they were going to Acapulco on the Pacific Coast, etc.

"Yesterday we visited the Teotihuacan pyramids (just north of Mexico City) and they were intensely interesting. If you haven't visited them yet, be sure to do so," she said. Then "What have you seen so far and what else do you intend to see?"

When I told her that we were interested in minerals only and had not seen nor did we intend to see any pyramids or ruins she was dumfounded. On showing her some pebbles which were in my pocket and the basalt with olivine from the trench, as "treasures" we had collected, she just opened her mouth and slowly backed away. In her estimation we must be "nuts" and so she wanted to have nothing to do with us anymore. We never met again.

Don and I would take it easy today,

we would tour parts of the city, on foot. With a map of the city in my hand, we headed northward for the Geological Museum which was located on Calle del Cipres (street) facing Santa Maria Garden, roughly about a mile north of Shirley Courts which were in about the center of the city. We had no trouble in finding the Museum but to our disappointment it was locked. "Manana" (tomorrow), said a man, working around the building, so we assumed it would be opened tomorrow. We crossed the street, walked through the nice little park (Santa Maria Garden), and headed southward a few blocks for the Natural History Museum, located on Calle de Chopo. This Museum was open and we spent about an hour in the corner which housed the minerals. Though there were many excellent specimens on display, it was only too evident that they had received no attention for years as they and their labels were covered with dust, and cobwebs were seen inside the cases. Nevertheless I made a number of notes on the minerals which, according to signs posted, belonged to the National University of Mexico.

Leaving the Museum, we headed eastward for Sanborn's, the swankiest American restaurant in the city. We had no trouble in finding it, but was it crowded! We had to stand for some minutes before Don spotted an empty table but in the meantime I had spotted a sign: "Gentlemen please wear coats". We were both in our shirt sleeves as the weather was warm, even though Mexico City is over a mile high (7,444 feet). Calling Don's attention to the sign, I whispered, "Shall we go out?"

"Make believe you never saw the sign and if they are going to be fussy, let them put us out," he replied.

We got a table, a waitress soon took our order, and we had a most delicious dinner, and priced reasonably, too. Though we were apparently the only men in the restaurant who did not wear coats, no one called the matter to our attention. Sanborn's is a very nice place. The waitresses are attractive girls who wear colored costumes reaching to the floor and all speak English. The restaurant is located

on Ave. Madero.

Leaving Sanborn's we headed westward—a short block away Ave. Juarez begins. Ave. Juarez is a wide street on the north side of which is the handsome Palace of Fine Arts and National Theatre, then to its left begins beautiful Juarez Park (Central Alameda) that covers many acres.

We had gone only a short distance down Ave. Juarez when I noticed a suburban car parked in the street and on its door were the words "Smithsonian Institution".

"Dr. Foshag must be in the city," I said excitedly to Don, "let's wait a few minutes and we may see him."

Strange as it may seem, though I have travelled considerably over the country for years, I never ran across, unexpectedly, anyone whom I knew (conventions, meetings, and club field trips are not included). I would have been delighted, therefore, to see Dr. Foshag, whom I know well. I knew Dr. Foshag had been in Mexico for sometime studying Paricutin Volcano and he might be here again. We waited about $\frac{1}{2}$ hour and as no one appeared I stuck a note in the car door informing him of my presence in the city. If Dr. Foshag was with the car, he would have called me up but—no call ever came. Later that year, when the annual meeting of the Mineralogical Society of America was held in New York City (Nov. 11-13, 1948) I saw Dr. Foshag and learned that when I was in Mexico City he was in Washington, D.C.

We continued our stroll down Ave. Juarez, turned left on Paseo de la Reforma, one of the world's famous boulevards, then some few blocks later we turned right on Calz. Manuel Villalongin on which street are the Shirley Courts.

Mexico City is a beautiful, clean city with wide streets, handsome buildings, traffic lights, etc. An American would feel right at home in the city even if street signs are in Spanish but he must have with him a city map as streets have the annoying habit of changing names—a straight street, for example, may change its name every 2 or 3 blocks.

Mileage for the day—none.

16th DAY

(Mon. April 26, 1948)

After a nice breakfast at Shirley Courts, we left by taxi for the Geological Museum (fare 3 pesos) as we wanted to get there in a hurry. The Museum was open and we were most fortunate in meeting Senor J. Ariel Hernandez Velasco, who spoke excellent English and who very kindly took us on a tour through the mineralogical department. Here in a large, well-lighted room were so many fine minerals, well labelled and well displayed that we were delighted and much pleased to look them over. Though all minerals bore Spanish names, their English equivalents were easily deciphered while Senor Hernandez Velasco graciously translated Spanish terms used in describing localities. We must have spent a most enjoyable 2 hours or more while I made many notes. There were many fine opals from the Queretaro area, rock crystals, amethysts, calcites, garnets, and of course ore from famous Mexican mines. One should have a week to spend in examining the minerals on display as our 2 hours were wholly inadequate. Collectors visiting Mexico City, be sure to visit the Geological Museum.

Senor Hernandez Velasco presented each of us with an interesting specimen of scheelite associated with epidote, quartz, hematite, and guanajuatite which came from a tungsten mine, Mina de la Luz, Leon, Guanajuato, Mexico.

We walked to Sanborn's where we had another fine dinner (minus our coats) but went by taxi (2 pesos) back to Shirley Courts.

At 3:15 p.m. we checked out of Shirley Courts and headed for Puebla, a large city to the east, where we wanted to visit one of the many onyx quarries for which the city is famous.

2869.0 (mileage) at Shirley Courts.

We had no difficulty in getting out of the city and were on a good road when I noted to my dismay that an airport we were passing was on our right—according to our map it should be to our left. We stopped, examined the map, then deciding we must be on the wrong road (there was no route number to be seen), turned around and headed back for the city. We took the first road to the left, went for

many blocks, to its very end, but nary a road turned off to the left. Again we examined the map, I even got out 2 or 3 times to inquire for directions, in drug stores, etc., but no one approached knew English. We were completely mystified why no road could be found which would go to the right of the airport. In desperation Don dug out another map and to our amazement this one showed the airport to the right of the road.

"Let's go back to that road again," said Dan, "and see where it takes us."

This we did, the airport to the right was passed, and about a mile or so further, there was our road sign. We had been on the right road in the first place.

2890.0. Los Reyes, a small community. 2891.0. (20 K post). In Mexico distances are measured in kilometers (K).

2905.0. Vista Hermosa (a sign here only but a nice view to right).

2906.0. (K 45). The road, which goes through beautiful mountain scenery, has been rising steadily and at K 45 we had our one and only car trouble of the entire trip. The water had boiled out completely and so we had to stop for about 1½ hour to cool the motor. We had a jugful of water in the car for drinking purposes only but not a sip did we ever get out of it—Don had to empty it all into the radiator. Though we had trouble with the car, the high altitude did not bother us at all. The mountains we were going through were the Sierra Nevada.

While waiting for the motor to cool off, I spent the time in examining the rocks which outcropped all around us. It was a peculiar porphyritic rock and I never did get it identified correctly (it escaped my attention until this chapter was in preparation).

2910.0. (K 50). From here and for a number of miles the road goes through a pine forest.

2913.0. (K 55.5). Continental Divide, the highest point on the road, 10,485 feet.

2917.5. Puebla State line.

2922.0. (K 70). Fine view to right of a smoking volcano. It is the famous Popocatepetl (17,888 ft. high).

2927.0. Iztaccihuatl Volcano (17,343

ft.) to right. This is an extinct volcano and its top is covered with snow. It is known also as the "White Woman" or the "Sleeping Woman" from its fancied resemblance to a recumbent female form. These two volcanoes are visible all the way to Puebla but a better view is had on the return journey when we will be facing them.

2945.0. An accident occurred here just a few minutes before we arrived. A large truck hit a big tree to left of road—truck badly damaged and tree broken off.

2954.0. Church visible off to right. It is in Cholula and is built on top of a pyramid.

2960.0. Puebla. City reached at 6:45 p.m., and we registered at the Pan-American Courts (got Cabin 23). The Pan-American Courts is another nice place, clean comfortable cabins with showers, etc. They are located on the western end of the city and the numerous posted signs make their location easy.

Mileage for the day—91.

17th DAY
(Tues. April 27, 1948)

2960.0. Pan-American Courts.

We left the Courts about 9:00 a.m., headed eastward for the center of the city where at the Colonial Hotel a guide was secured—his name was H. Jaramillo, and he turned out to be a nice young fellow. On learning that we wanted to visit one of the onyx quarries of the area, he contacted a friend, Jose Davila, to go with us. Senor Davilla operates an onyx shop, "House of Tecali Onyx" and seemed delighted to go with us. He guided us to 2 small quarries located about 20 miles east of the city on the road to Tehuacan. We lost a few miles driving in the city but when we started for the quarries the mileage was as follows:

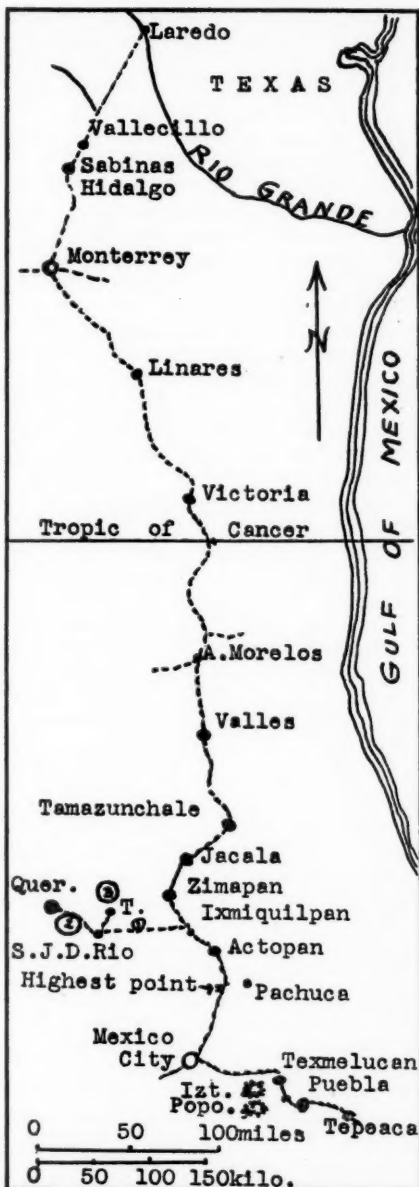
2967.0. Puebla (eastern limits).

2967.5 (K 140). Road to left goes to famous Malinche Mountain.

2983.0. (K 165).

2985.0. Quarries to right (we park here).

Immediately adjacent to the road (on right) was a working limestone quarry whose rock was used for crushed stone. It was 200 feet in diameter with a 15-foot face. Having a guide with us, we



Dotted line shows route taken through Mexico by the two collectors. Izt. and Popo. are the volcanoes Iztacchuatl and Popocatepetl.

naturally stopped at the quarry but the only mineral seen was calcite. I got a nice 2x3 specimen consisting of white crystalline calcite on dark gray limestone.

About 500 feet from the road, on a 30% treeless slope, was our first onyx quarry. It was a pit 10 feet deep and 100 feet in diameter. Here light brown banded calcite (onyx) was plentiful and in nice pieces; it was also seen in place in the pit as masses in white crystalline limestone—the floor of the pit was bluish limestone. A small mass of black chert was also found but it was of poor quality.

About 100 feet further up the slope was another and smaller pit, 5 feet deep and 50 feet in diameter. Its rock was the same as in the previous pit. These 2 pits were not in operation when we visited them.

The sloping terrain for hundreds of feet in all directions from the pits was dotted with limestone outcrops which in turn was checkerboarded with onyx. Small pot holes were numerous also. Alongside the working quarry at the road was a small stockpile of onyx and from it we collected some very fine light green specimens.

We learned from Senor Davila (who speaks English) that the largest quarries are in Tehuacan and Tecali but as we did not want to go on to them we, therefore, returned to Puebla.

We had a nice dinner at the Colonial Hotel. After dinner Senor Jaramillo joined us again to conduct us on a tour of the city. Our first stop was at the "House of Tecali Onyx" where we saw many beautiful carved and polished specimens on display such as ash trays, book ends, cups, saucers, lamps, bottles, statues, birds, animals, etc., etc. Senor Davila has these made in his own shop, using Tecali onyx exclusively. I purchased a beautiful 2 inch. polished brownish cube (the smallest and least apt to break item because my bags were already overloaded). Should any reader desire to purchase some Tecali onyx, contact Jose Davila, House of Tecali Onyx, 3 Oriente Num. 204, Puebla, Puebla, Mexico.

Senor Davila was good enough to give me some information on onyx which

might be worked up into an article for a later issue.

We next headed for Santa Monica Secret Convent which had been operating secretly from 1857 to 1935 when it was discovered and closed (no convents are permitted in Mexico); it is now opened as a museum. A small hand weaving plant across the street from the convent was visited. The Rodeo Ring is a beautiful arena. The Cathedral, in the heart of the city, was also visited. First we climbed to the top of the Cathedral towers. The many large bells, the 3-foot thick walls, and the fine view of the city were most impressive. It is the inside of the Cathedral which really awes one for it is extremely beautiful. This huge Cathedral with its 15 altars is the 2nd church of importance in Mexico, only the Cathedral in Mexico City outranks it.

A visit to a pottery and tile manufacturing plant was our last visit. Here one of the friendly potters made me a little souvenir which I still treasure. In return he received a peso which delighted him.

We drove Senor Jaramillo back to the Colonial Hotel, paid his fee (Don did it and I never found out what it was), and we headed back for Pan-American Courts. We got as far as the Cathedral when Don decided that he needed a haircut so he parked his car facing the plaza and left me in it (at my request).

I hadn't been sitting long in the car before I noticed a young fellow walking up and down in the plaza and more or less eying me. His demeanor was so unusual that I had a feeling he wanted to speak to me but did not have the courage. Suddenly he disappeared and I just about put him out of my mind when—"How do you like our country", said a pleasant voice. I looked to my right and there he was! He was a nice looking young fellow, about 15 years old. On being assured that I thought Mexico was a fine country he put this request to me, "Would you be good enough to hear me read English and correct my pronunciation?" (He had seen the Tourist sign on the windshield of our car and thus knew we were Americans). He had a book with him which I hadn't noticed before.

"I'd be delighted to. Get in the car with me."

The lad sat down alongside of me, and opening his book he began to read. The story was some simple fairy tale but his pronunciation was very good. I enjoyed this experience very much and you could not help liking him, he was such a nice fellow. It was with sincere regret that we had to part when Don arrived—and I never got his name.

In the evening Don and I walked down to the business section of the city—built around the large plaza—and spent a most enjoyable 2 hours or more taking in the sights. First we had a light dinner at the English-speaking restaurant as we called it (sign on window read, "English Spoken"). We had eaten there twice before, the same waiter served us both times, but tonight a young girl came to get our order. Our order given in English drew only a blank face. It was repeated and again no response.

"Guess she doesn't understand English," I said to Don, "what will we do?"

The girl had been staring at us all the time and suddenly she started talking in English, took our order and left. When she came back we got her into conversation and learned that she thought her English to be poor and that we might laugh at her—this is why she did not want to admit knowing the language (this trait is common with the natives of the city, we also learned).

Puebla is a most fascinating city. Its population is 137,000 and it is the 4th largest city in Mexico. Its business section would delight any shopper, especially if he could speak Spanish. Many of the large establishments have no store fronts, such as windows and their displays—the entire front would be open and you could get a very fine view of the interior with its well stocked merchandise. Sometimes, in the case of a furniture store, one would get a little shock as he would find himself looking right into, apparently, someone's kitchen or bedroom. These stores close their fronts by large sliding doors which drop down from above like that of a huge garage door.

There was a beautiful candy store

whose window display (it had one) showed some mouth-watering candies. The prices quoted, however, had us buffaloed, as we could not understand them. Having a longing for a Hershey bar, I went into the store, alone, looking for it. This was one of the most beautiful candy stores I was ever in. It was a large store, too, and the array of candies was unusual, but not even one bar of Hershey could I see. I went up to one of the girls and asked for a Hershey bar. She looked at me in amazement. Remembering the girl at the restaurant, I repeated my request a second time, then a third time, when suddenly she burst out laughing. I knew by this that the girl did not understand English so I burst out laughing, too, and with a bow turned around and walked out of the store. I did not have the nerve to ask any of the other girls.

Around the plaza were a number of small booths displaying various articles of merchandise. Suddenly I stopped for in a candy booth I saw Hershey bars. Stepping up to the booth, I dropped a peso note at the same time picking up 2 bars. The young girl in the booth looked at me for a second then burst out in a "string of Spanish words, talking very fast.

"What is she saying?" I asked Don.

"Search me," was his encouraging reply.

Looking back at the girl, she suddenly stuck her hand out towards me, talking fast at the same time. In her hand were many coins and thinking it was my change I was just about to reach for it when I noticed that my peso note was still untouched. Not knowing what to do, I put back one of the bars. The girl immediately started smiling, picked up my peso, and handed me 15c in change. The Hershey bar cost 85c and I had a rough idea it would be about 25c. I was also a little embarrassed and walked off with only the one bar. Don insisted he did not want one, so I did not go back. On opening the wrapping, half of the chocolate fell into the street. Candy comes high in Mexico, and this was my one and only experience with it.

Traffic in Puebla is pretty heavy and we soon learned that when a traffic officer is

facing or has his back to the traffic, traffic stops, when his side is towards the traffic, traffic moves.

3018.0. Mileage at Pan-American Courts.

Mileage for the day—58.0.

18th DAY
Wed. April 28, 1948)

3018.0. Pan-American Courts. We checked out at 9:15 a.m. (cost for the 2 nights and 1 day was 30 pesos) and headed west for Mexico City.

3019.0. Big cement works to left with a large quarry of red limestone on its western edge. Did not stop. In some manner the quarry had escaped our attention or we would have mentioned it to Senor Jaramillo.

3020.0. Very good view of Popocatepetl and Iztaccihuatl Volcanoes had from here. They appear to be close together, Popo being to the left, with a deep sag between them. Both were snow covered at the tops but only Popo was smoking.

3021.0. Don got out to get a picture of the volcanoes. I got out, too, and in the terrain to right of road found a nice dark red jasper pebble.

3024.0. Turned left for Cholula to visit the large church built on top of a pyramid. A guide was here secured who not only took us through the beautiful church (Virgin of the Lady of Remedios) but through the pyramid beneath. A tunnel has been excavated through the pyramid and a number of passages opened—electric lights have been installed which the guide turned on and off. According to the guide, whose name I did not get, the existence of the pyramid was not known when the church was built; sometimes around 1930, if I can quote him correctly, a heavy storm washed away a good part of the hill revealing the pyramid. Since that day, excavations have been carried out to clean out the passages of the pyramid and to make them available for public examination. Excavations are still being carried out, as evidenced by the narrow gauge track and the small waste dump near by. It is quite a climb to the church above.

The guide took us also to Santa Maria Church, some few miles away, whose in-

terior is extremely beautiful.

According to the guide, there are 365 churches in Cholula (a small town).

3043.0. Cholula again. Here we discharged the guide (fee 15 pesos) and we continued towards Mexico City.

The views of the two volcanoes were very clear and distinct as we were facing them for many miles. We had no trouble in crossing the divide.

3120.0. Shirley Courts in Mexico City (3 p.m.). Got the same cabin we had before, No. 57.

We spent the rest of the day strolling through the city. We had dinner at Sanborn's first. Then we walked through the business section surrounding the restaurant. A visit was made to the Palace of Fine Arts and National Theatre (very beautiful inside and out), then to the top of the Monument to the Revolution (via elevator).

Mileage for the day—102.

19th DAY
(Thurs. April 29, 1948)

Today we head northward for home. We had our car serviced (the day before) and so are ready for our long journey. We checked out of the Shirley Courts at 8:30 a.m., and head for the Pan-American Highway which will take us to Laredo, Texas, the same road we came down on.

3122.0. Shirley Court, Mexico City.

3129.0. Police station at outskirts of city.

3132.0. Large quarry to left; did not stop.

3179.0. (K 90). Monument to left (site of highest point on the entire Pan-American Highway between Mexico City and Laredo, Texas—8,207 feet).

3195.0. Sign here—El Jiadi. Don got out to take a picture of a Century plant in bloom. I roamed the nearby terrain and got a small but nice brownish-white chalcedony.

3250.0. Zimapan, 11:45 a.m. Had a nice dinner at Hotel Fundacion (where we spent the night of April 22nd).

3326.0. Limestone outcrops around here look like tombstones.

3346.0. Stopped to get some bananas in one of the banana growing districts; got better ones at home.

We were approaching Tamazunchale and were thus on the lookout for youngsters selling rock crystals as reported April 22nd. Sure enough one was seen, a young girl in the road, and we stopped to examine her wares. Suddenly a woman appeared, almost out of nowhere, and she too had crystals for sale; but the crystals of both were so poor, broken, etc., that they were not worth looking at and so we drove off.

We saw more natives offering crystals for sale but as they were all girls we did not stop.

3350.0. Tamazunchale.

3353.0. Balconde Moctezuma—parking space. Good view.

3353.5. Beginning of basalt outcrop which extends for many hundreds of feet. The only mineral noted was calcite which was present as thin white crusts on the basalt.

3415.0. Disinfection station. Don had to drive the car through a trough filled with dark brownish liquid; then we both had to get out and walk through a trough containing some material (leaves perhaps) heavily soaked with the same brownish liquid. I believe this was to prevent spreading of fruit disease.

3416.0. Valles, 6:45 p.m. Registered for the night at Casa Grande. Had room 30 (25 pesos).

We had a nice meal at the hotel but no sooner did we begin eating when the lights went out—then there was a rush for candles, lamps, and even lanterns—as the dining room was well filled. Ten minutes later the lights came on but went off again before long; they came on again shortly and we were then able to finish our meal without any more interruption.

Don took a walk through the little town but I stuck close to the hotel, fearing another power shortage. There were quite a number of us sitting out in front of the hotel and within 1/2 hour or so the lights went off about 3 times—wasn't the town dark! When the lights came on the third time, I rushed up to my room to make sure I would reach the right one were the lights to go off permanently for the night. Don came in shortly and there were no more power shortage before we retired

for the night.

Mileage for the day—294.

20th DAY

(Fri. April 30, 1948)

3416.0. Casa Grande, Valles, Mexico.

3458.0. Junction road to left, also another disinfection station.

3463.0. Working limestone quarry 200 feet to right. It was about 100 x 50 x 25 feet high, rock used as crushed stone. We did not stop to investigate it. Quarry is between 550-551 K (mentioned in report on April 22nd).

3464.0. Huge cave (?) about 150 feet above road to left. Entrance is squared and looks as if concreted. The cave is in the face of an almost vertical cliff or rock cut. Perhaps before the road was put through one could walk to it but the deep road cut has now isolated it. As there was no room to park, we could not stop to investigate it.

3465.5. (555 K) Beginning of a nice level area; somehow we forget to mention this flat area on our journey down from Laredo.

3476.0. (571 K). El Mante.

3481.0. Don spotted a tree with some red flowers on it, so stopped the car to get a picture. As usual I roamed the terrain and this time collected several nice black basanite pebbles.

3483.0. Limon, a small town. We had a soda here.

3524.0. (650 K).

3527.0. Basaltic boulders all around here. We got out to look them over—the only mineral seen was calcite which occurred in tiny white crystal masses in amygdulæ.

3536.0. Tropic of Cancer crossed. A small wooden sign is here. This time we stopped to look the ground over. The terrain seemed to be a flat desert area and we had it all to ourselves—no cars or trucks going by and wonder of wonders, not even one native popped up to disturb us. There were a number of basalt boulders scattered around but the only mineral found were tiny white crystal masses of calcite. Before we left, Don took a picture of me leaning on the "Tropic of Cancer"—I wonder what this is to signify?

3559.0. Victoria. We had dinner in the Sierra Gorda hotel, the same hotel we ate in on the way down.

3655.0. Last disinfection station (on edge of Linares).

3655.5. Linares, stopped for a soda.

3672.0. Rio Potosi—river full of boulders but we did not stop to investigate them.

3688.0. (916 K). Montemorelos, a little town noted for tangerines. Many booths were seen along both edges of the road, loaded down with the orange fruit—the tangerines were in clusters of about 2 dozen to a cluster—and many of them were strung up so that they made a pretty appearance. There were so many booths that we did not know at which to stop and when we did—at the last one—the woman attendant was so slow in waiting on us that the longer we waited the poorer her tangerines began to appear and we finally left in disgust without them. About a mile past the town 2 boys were seen in the road, one holding up a cluster of tangerines which looked good. One peso was the price asked, and I bought them. There were 2 dozen to the cluster and sweet—the sweetest tangerines I ever tasted!

3721.0. The famous Saddle Mountain of Monterrey appears ahead and to our right. Its top resembles in appearance a specimen in my collection—chalcedony pseudomorph after fluorite from Tresztyan, Hungary. The resemblance is very striking.

3734.0. Monterrey, southern limit of city.

3740.0. California Courts, on northern outskirts of Monterrey. Here we registered for the night even though we got here early. Got Cabin 20. Rate for night, 25 pesos.

The California Courts were very nice, covered a large amount of ground, and directly in front of our cabin was a large swimming pool, but empty. Late that night water was pumped into it and by morning the pool was full.

"You are in luck," said my next door neighbor, an American, "because tomorrow afternoon the prettiest girls in the city will be using the pool, they use it

every Saturday afternoon. And the pool is right in front of your cabin. You will have a nice view."

"Just my luck," I moaned, "because I will miss it all. We leave early tomorrow morning."

In my rambles over the terrain and nearby area, I noted many limestone pebbles and small masses. One pebble I picked up had a nice pinkish crystalline vein of calcite in it.

Mileage for the day—324.

21st DAY (Last day in Mexico) (Sat, May 1, 1948)

3740.0. California Courts, Monterrey.

3778.0. Mamulique Pass, Scenery very beautiful, as mentioned on trip down.

3801.0. Powers Cafe in Sabinas Hidalgo. We stopped as before expecting to have a good dinner but got only a light lunch. Due to a local holiday, the Mexican help did not show up for work and so no meals could be served. And was I hungry!

3809.0. Don stopped to get some pictures. I forgot to mention that Don is a kodachrome enthusiast and we made many stops for pictures on the way back from Mexico City. Small grayish limestone masses were common around here; a loose one inch white fossil shell was found—the only fossil we saw in Mexico.

3815.0. We stopped so I could investigate some tiny white particles that sparkled in the road and which were especially noticeable on the way down from Laredo—these particles sparkled for many miles but I never stopped to examine them—this time I did. As suspected they turned out to be white calcite cleavages. I collected a handful and they were such beautiful little specimens that they were not thrown away—on arrival home some of the cleavages fluoresced red under the Mineralight. As the white calcite from the nearby Vallecillo mine fluoresces red also, it may be that some of the mine dump may have been crushed and used as road fill.

3816.0. (1124 K). About 200 feet to right is a cemetery, 500 feet ahead is Vallecillo, and 400 feet to left is the abandoned Vallecillo lead-silver mine. Of course we stopped as we did not on the

way down. We found the mine to consist of a vertical shaft with an extensive dump surrounding it. Off to the west of the mine (we were heading north for Laredo) another mine was visible, about a mile away. There were no trees or high bushes here, so one could see a long ways.

The dump seemed to consist almost entirely of calcite, white to colorless, but so heavily stained brown that only small cleavages can be obtained free from staining. Nice rhombohedral cleavages of calcite were common. A number of specimens were collected and all fluoresced deep red under the Mineralight, the stained ones the best of all.

A lustrous cleavage mass of galena, associated with coarsely crystalline deeply stained calcite, was also found; this calcite fluoresced the best of all specimens collected.

Vallecillo is such a small hamlet it does not boast a store—at least we tried to get a soda but no luck.

3882.0. Nuevo Laredo, Mexico, on the Rio Grande. Arrived 11:30 a.m. Had soda here.

3882.5. International Bridge over the Rio Grande (toll 15c). Laredo, Texas, on the other end with its U.S. Customs Inspections. The inspection of our baggage was very brief—lasted only about 10 minutes—because we did not have much with us. Those who followed our trip into Mexico may recall reading that we had stored a lot of our excess equipment, etc., at Cortez Courts in Laredo, so that it would be easier for us to pass through customs inspection.

3884.0. Cortez Courts again, on the northern outskirts of Laredo, Texas. We arrived at 1:05 p.m. and got Cabin 16A.

It was hot in Laredo, 109° (the hottest May 1st on record, so we were told). However the heat did not bother us too much. We headed back to the business section of the city where I first made plane reservations for tomorrow (Laredo to New York via Chicago—\$123.52). Then we had a good dinner at Hamilton Hotel.

We had one more trip to make, to an agate locality near San Ygnacio, in Zapata County, Texas. This was about 45 miles south of Laredo. The location was given

Don by some rockhound in Austin, Texas, but we had some difficulty in finding it. Perhaps we did not find the right locality but we did find a large level area whose terrain was coated with quartz pebbles—there were dark brown moss agates, gray chalcedony, red jasper, and brown petrified wood.

3976.0. Cortez Courts, Laredo, again.
Mileage for the day—236.

22nd DAY

(Sun. May 2, 1948)

We have a subscriber in Laredo, Mr. J. E. Applewhite, whom I called up on the phone. He was delighted to hear we were in the city and invited us to visit him and inspect his minerals—in fact he came to get us. What a surprise we had when we saw his stock of minerals! Mr. Applewhite is a rockhound through and through whose specialty is cutting and polishing of quartz. He had slabs of agate, jasper, chalcedony, petrified wood, not by the dozens or even hundreds, but by the thousands! Many were extremely beautiful. We enjoyed the visit very much.

In visiting Mr. Applewhite, I happened to notice that in the concrete sidewalks, macadamized roads, etc., brown jasper pebbles were common—they were used as ordinary gravel for road construction.

Returning to Cortez Courts, I spent the rest of the day left to me in packing up the minerals collected in Mexico and near San Ygnacio. These Don would ship to me by express tomorrow or at the first day convenient to him. About 2:45 p.m. we both checked out of Cortez Courts and headed for the Laredo airport, about a mile away. Here we parted. Don was to head northwestwardly for Alpine, Texas, and other points west, while I was to head northeastwardly for New York. How I hated to see him go! He is one of the nicest fellows I know and we became quite attached to each other. Perhaps, one of these days, we may join up again on another and longer trip.

As my plane did not leave until 3:20, I had a few minutes to spare which were spent in walking over the airfield. To my amazement the field was full of brown jasper pebbles. Many unusually nice ones were seen.

I left Laredo on a Braniff Airway plane, bound for Chicago but would make 2 changes on the way up, at San Antonio and Dallas. It seems to me that I was the only passenger on the plane. And was it hot! The Stewardess assured me it would be much cooler once the plane got way up but then, as if fearful I could not wait that long, she hastened to bring me 2 large glasses of cold soda. Was it good! She was a nice girl whom I first met before the plane started, in fact the entire personnel at the airport was unusually nice. One young man was so friendly and courteous it was a pleasure to talk with him, but when he called me by name, I was extremely surprised.

"Why I sold you your ticket yesterday, Mr. Zodiac, that's how I know your name," he explained. "I hope you have a nice trip to New York."

Yes the people in Texas are nice and they have a nice way in making a stranger feel comfortable and at ease. They seem to size up a stranger instantly and once you pass inspection nothing is too good for you; they will go out of their way to do you favors.

At Dallas, Texas, I had to wait over an hour for the next plane and spent the first 15 minutes walking around the area. Near the airport I noticed some pebbles and among them were quite a number of brown jaspers. Then it dawned on me that a young couple from Peekskill were residing in the city and I rushed to the phone to call them up. They were home and delighted to hear I was in their midst. "Stay right there and we will be out in 10 minutes". In about 10 minutes Mr. and Mrs. Dain Hancock arrived and with them were their two youngest children, Marguerite and Billy. We hadn't seen each other for over 6 years and so the meeting was of special interest to us all. Marguerite is only 3 years old and the sweetest girl imaginable—I was greatly tempted to accept their invitation to stay overnight with them so I could see more of Marguerite.

The plane was ready at last and with sincere regret I had to leave my friends and continue the journey northward. At 7:50 p.m. the plane zoomed up into the

sky and we were off for Chicago. This was a big plane—DC6—and I had the most enjoyable plane ride of my life.

It was 11:50 when we landed at the Chicago airport and when I got out of the plane it was to emerge into cold air. The Chicago airport is large and to reach the United Air Lines office I had to walk about $\frac{1}{2}$ mile (so it seemed) in the open. How I did shiver! If my bags were with me I would have put on all my 10 shirts, including a light sweater, to keep me warm. The words of the pretty Stewardess at Laredo came back to haunt me—"It will be much cooler once the plane got way up"—up Chicago way, she should have added.

On checking at the United Air Lines office, I learned that my plane (Flight 506) for New York, would be delayed in leaving and might not land in New York City at all (due to a heavy storm in New York) but at Hartford, Conn. This was not good news at all and in disgust I walked out of the office and into the cold air. The air now did not seem to be so cold and I spent about $\frac{1}{2}$ hour walking around the outskirts of the airport. The area was well lighted and at one spot I noticed some grayish pebbles and picked one out at random to examine later. This turned out to be a gray crystalline dolomite that phosphoresced whitish under the Mineralight.

23rd DAY

(Mon. May 3, 1948)

At 1:00 a.m., the United Air Lines plane left Chicago heading eastward for New York. Tired though I was, I could not sleep a wink and so rode the whole night through, awake. We made no stops enroute but flew straight for New York (a nice ride, too). Apparently the storm had slackened for we landed at La Guardia Airport at 6:00 a.m. The airport was soaked with rain and so was the entire city. I got the 9:15 a.m. train out of Grand Central Terminal in New York City for Peekskill which I reached at 10:25 a.m.

It was a grand trip. I traveled 3976 miles by car, about 2600 miles by plane, 80 miles by train, for a grand total of about 6600 miles.

Some Observations on Mexico

Mexico is a beautiful country and its people happy, very friendly, and courteous. I saw sights which filled me with admiration and awe, some made me laugh, while others made me sad.

One sight which filled me with sorrow were the number of natives seen trudging along the road, all carrying heavy loads on their backs. They were barefooted, in tatters, and were extremely young or very old. There were dirt paths alongside of the road and the natives would always walk these paths—never in the road. They never molested us in any way—they never appeared to notice us in any way—they went their way and left you to go yours. At times I felt most uncomfortable driving by in a big car while some poor little fellow would be trudging along bent under a heavy load, perhaps too tired to look up. At one spot we passed a little girl, about 10 years old, ragged, barefooted, and also bent under a heavy load of fagots—the load looked to be about 50 lbs. in weight.

Strange as it may seem, I didn't see a single bird, nor a wild animal of any sort, and as for flowers, the small desert flowers seemed very insignificant to me.

It was my observation that if you wanted good material from vendors in Mexico to ALWAYS buy from men or boys—never from women or girls. It seems only too apparent that the men and boys grab all the best material to sell, leaving the rejects for the women and girls.

The natives have the habit, also, of appearing suddenly out of nowhere. Look up a road and you see no one; blink your eyes and—a native is standing before you. Either they blend in with the landscape or else they are extremely quick in their movements. No matter where you see them, they seem to be very friendly people.

On the long stretch from Laredo to Mexico City we saw many trucks and buses but not a single car (except in

cities). A bus would often stop at the most lonely spot imaginable (miles from any town), a passenger would get off and into the brush he would disappear (his home must have been in the brush somewheres).

We saw many trucks parked along the road with their drivers and assistants underneath, sound asleep on their backs. No doubt the coolest spot on a hot sunny day would be underneath a large truck—and safe on a level stretch—but when such trucks are parked on a hill with men underneath, it would be no place for us—we would not trust the brakes.

We saw many burros, the little animals always carrying something; in many cases young boys would be riding them. I always got a kick watching the boys riding burros. On coming towards you their little feet would be swaying back and forth and on approaching closer you often discover that two boys would be riding a burro, all laughing and having a good time. In only one instance did we see a woman riding a burro and a man was helping her to stay on. She was laughing and having a good time—she might have just gotten married and her husband was treating her to a ride, perhaps her one and only ride on a burro. "I've got to ride a burro before I leave Mexico", I kept telling Don over and over again but never did—never got the chance.

Another wish which did not materialize was my desire to go underground in some mine or cave.

I will have to return to Mexico someday to ride a burro, go underground, and to tour some more of the beautiful country!

The End

Do Your Christmas Shopping Early!

But this Christmas let your gifts be mineralogical!

Buy from dealers who advertise in "*Rocks and Minerals*—you will buy right and they will be right buys!

OILMEN FIND A HIDDEN CRATER

SCAR CREDITED TO HUGE METEORITE IS DISCOVERED BY PETROLEUM EXPLORERS IN WESTERN AUSTRALIA

(Reprinted by permission from **Socony-Vacuum News**, April, 1949)

Sometimes the search for oil produces strange by-products. Of interest to scientists all over the world is the discovery of a large crater, believed to be the scar made as a meteorite struck the earth perhaps hundreds of years ago, in Western Australia. The discovery was made by a petroleum geologist and a petroleum geophysicist who were flying over the island continent's Desert Basin in the course of explorations aimed at finding new sources of crude oil.

The explorers, Dr. Frank Reeves, geologist, and N. B. Sauve, geophysicist, both of the Vacuum Oil Company Pty. Ltd., an affiliate of the Standard-Vacuum Oil Company, were flying in a plane piloted by Dudley Hart. Their reconnaissance took them over the northeastern fringe of the Desert Basin. About 64 miles from the tiny settlement of Hall's Creek, and about 400 miles inland from Australia's

west coast, they saw on the flat plain a hill ridge in almost a perfect circle. Flying low over it they saw that it was a crater of some kind—perhaps volcanic, perhaps the scar made by a meteorite hurled from outer space. There was no record of the crater on the map—only the indication of a low hill.

Reporting their observations, the explorers were informed that they were the true discoverers of the crater—no report of its existence having been made previously. This is the more remarkable because, while it is in wasteland, the area is not more than 25 miles from Sturt Creek and 30 miles from Billiluna, more fertile sections in which there are many cattle leases. However, if cattlemen had followed wandering cattle into the wasteland and had come up the ridge, it would have seemed to them, from the floor of the plain, to be merely a stony outcropping.



The crater is more than a mile in circumference. The ridge is 60 to 100 feet above the plain.

(Courtesy **Socony-Vacuum News**)

Its peculiar form, an almost perfect circle well over a mile in circumference, is not apparent as it is approached from the plain.

Returning to the area in a jeep from Billiluna, Dr. Reeves made a careful study of the crater. His opinion, made in a report to Dr. H. G. Raggatt, director of the Commonwealth Bureau of Mineral Resources, is that the crater is the scar made as a huge meteorite struck the earth. Dr. Raggatt and his associates were impressed with the resemblance of the crater to the meteorite crater near Canyon Diablo in Arizona. The Australian crater, given the name of "Wolf Creek Crater," was later visited by a party sent out by the Australian Geographical Society, and geophysical work in the area is planned by the Commonwealth Bureau of Mineral Resources.

The crater is about 2,800 feet in diameter at its bottom. The bottom is about 100 feet below the level of the plain. The rim, composed of rock shattered and tilted at various angles, rises from 160 to 200 feet above the bottom of the crater. There are many trees growing in the crater.

Geologists who have visited the crater believe—judging from the extent to which the rim, or lip, of the crater is worn in places and from indications that the earth level within it was much lower at one time—that the crater was made at least 300 years ago. The geologists' theory is said to be that the meteorite penetrated the earth 600 feet or more and then exploded. Dr. Reeves sent one of the rock specimens found on his visit to the Australian Museum. Dr. R. O. Chalmers, curator of minerals, has reported that the specimen is "iron shale", formed by the oxidation of nickel-iron meteorite (siderites) after long exposure to the atmosphere. He reports that it is superficially very similar to the "iron shale" found in the Henbury craters in Central Australia. These craters, smaller than the Wolf Creek (the largest is 600 feet in diameter), have long been objects of great interest to scientists.

Meteorites are masses of stone or iron (usually nickel-iron) that reach the earth

from outer space. However, if they burn and disintegrate as they enter the earth's atmosphere, they are called meteors or shooting stars. Their origin is still the subject of scientists' speculations. The largest known meteorite is a solid mass of nickel-iron that was brought to the United States from Greenland by Admiral Peary. It weighs 36½ tons. In the British Museum is a 3½-ton meteorite found at Cranbourne, near Melbourne, Australia.

It is impossible to say with certainty whether the great crater discovered in Australia is the largest or the second largest of its kind yet found. The Canyon Diablo crater in Arizona measures 4,275 feet in diameter, is 500 feet deep and its walls vary in height from 100 to 150 feet. These dimensions make it larger than the Wolf Creek Crater. However, one authority has stated that the Diablo crater may have been the result of a volcanic steam explosion rather than a meteorite. Of course, the possibility has not been discounted that the Australian crater, too, may have been caused by some volcanic disturbance.

A Souvenir of Cobalt

When C. O. Gettings, of Toledo, Ohio, was in Cobalt, Ont., Canada, this past summer, he sent the Editor of *Rocks and Minerals* a post card in the corner of which was inserted a small, thin piece of native silver. The following information appears on the card:

A Souvenir of Cobalt

"The best old town I know"

This famous silver camp came to life by a silver boom in 1905.

Silver was found here close to the surface in highgrade ore. Almost pure silver.

It boomed and prospered for 45 years and the mines of the District produced over 700,000,000 ozs of refined silver.

Now, with an important use for our secondary metal, cobalt ore, and the price of silver raised with its uses doubled, Cobalt is again enjoying prosperity.

The silver used here is just as it comes from the ground, cleaned.

A souvenir of the largest and richest silver camp in the world.

(Mined and manufactured for Silvercraft, Cobalt, Ontario.)

MY MINERALOGICAL ACTIVITIES FOR THE 1949 SEASON

By E. LAWRENCE SAMPTER

49 West 45th Street, New York 19, N. Y.

This was not as active a Season at the quarries, for us, as in past years, but very much more so in other respects and very prolific in specimens of fine crystals. We did get to 10 different quarries several times each, but not to Palermo, in N. H., or Lord's Hill, Mt. Mica and Newry in Maine, or to many others, now active places, producing fine collectors' items in Oxford County, Me. We were also unique in not going around with a counter. Visited about 20 well known mineral-minded men; were in three museums; saw several fine collections and five mineral dealers.

So I kept in touch with all of the latest activities and did get many fine additions to my collection.

BERYL

Beryl—my specialty—priced at over \$400 a ton today—is being mined everywhere now. Many places formally worked only for feldspar, are now actually being raked over for every chip of beryl and old dumps are being gone over to gather up each piece that was formally thrown away. Good crystals with terminations for collectors, are rarer than ever—dynamite ruins them all.

Beryl Mountain

The famous old Bumpus quarry, in Albany, Me., is being blasted for beryl again, but Beryl Mt. at S. Acworth, N. H., is now the prize producer of them all. We were there many times. It is being worked by the Ashley Mining Co., under the supervision of Howard Hawks, by about 6 men and the famous "Mineress", Miss Virginia Harriman, who was publicized by Mr. T. Orchard Lisle's article in a recent issue of *Rocks and Minerals*. Beryl Mt. now produces about a ton a day and several carloads of beryl have been shipped out this Summer. The beryl is beautifully crystallized; from deep golden to dark blue in color, but has practically no clear gem material in it. The quarry also has some specimens of

beryl altering to bertrandite, as well as beryl crystals completely replaced by quartz and beryl crystals colored blue at one end and blending into deep gold at the other end. There is also a little uranium, some columbite-tantalite and at least three other rare minerals coming out in small quantities. The purest known massive white quartz; the best grade of feldspar; large books of the usual muscovite mica; a very few clear and smoky quartz crystals and some massive rose quartz are also present. But beryl is everybody's cash "crop" today. This place is easy to reach by car—just ask the very obliging Mr. and Mrs. E. R. Burke at the S. Acworth store for directions.

North Carolina

Spruce Pine, N. C., we "surveyed" under the able guidance of O. Ivan Lee, who knows that territory thoroughly and who should write a detailed article about that mineral-rich region. Acquired many specimens from that section. Also obtained some of those beautiful Iredell County, N. C., amethysts from J. T. Walden of Statesville, N. C., who has many of his state's minerals for sale to collectors.

Trap-rock Quarries

Frequented the Vandermade quarry in Prospect Park, Paterson, N. J., with several members of the New York Mineralogical Club and always with Mr. Lisle, who is now the club's most active specialist for that place. Were also in Franklin, N. J., with Mr. Lisle and to other nearby trap-rock quarries.

Acquired fine datolites and babingtonites at the Lane #3, trap-rock quarry in Westfield, Mass., which is not as prolific in specimens as Paterson, but where the zeolites are much larger, especially the two just mentioned. Visited several other trap-rock quarries, which are all very busy now, due to the great amount of road building going on.

Also—as a "side-line"—looked in vain,

for dinosaur tracks and fossil fish near Amherst, Mass., where they are to be found.

Jasper Beach

One enjoyable place for "pebble-polishers", as Mr. Vlismas used to call them, is Jasper Beach, near Machiasport, Me., almost the most easterly point of the U. S. A. We were there several times.

It is a beautiful spot about 600 feet of semicircular beach, with pebbles up to about fist size—all perfectly rounded by the tide. The beach is about 100 feet wide and the stones are piled about 15 feet high from the low water mark. It is an unusually interesting geological locality with an exceptionally high tide and there are few, if any, similar places in the world. The stones are all very beautiful, when wet, or polished, due to the deep red banded jasper and the green andesine.

By coincidence, one enters *Jasper Beach* by permission, and through the private property of a Mr. and Mrs. *Jasper*, of Machias, Me. I have a number of these jaspers, to distribute to my lapidary friends.

Ike Skillin, of Freeport, Me., cuts his famous "lucky" frogs out of this jasper.

Ask anybody at Machiasport as to just where the beach is. For the amateur lapidary, who can get so far "down East", it is worth the trip for this cutting material.

The North Eastern coast of Maine is also studded with old mines—most of them opened about 1880—which produced some silver and molybdenum. There are also well founded stories of platinum and diamonds having been found on that coast. This summer there has been a secret gold strike made there, too, where many other precious and rare elements have also been discovered in small quantities.

That covers the actual quarries we were able to visit this season.

Howard Irish

Howard Irish of Buckfield, Me., who owns Mt. Mica, blasted there this year and opened up some new pockets. These did not produce the famous tourmalines, but fine crystals of smoky quartz, feldspar and an unusually formed tabular white beryl. Harvard University, naturally being actively on the look-out for rare specimens

at all times, got the finest piece—about 1" x 4" x 12" in size—a perfect museum crystal; I got some nice specimens too, but much smaller.

Noyes Mountain, Me.

Nestor Tamminen, at the foot of Noyes Mt., has opened some large new pockets on his property, across the road from his house. They produce beautiful quartz crystals with double terminations, about 1" long and smaller, with a brilliance like and close similarity to the Herkimer "diamonds".

There were hundreds of collectors up Noyes Mt. this Summer and there are rumors of some rare finds having been made there too.

Snyder and DeCoteau

Had the pleasure of calling on Leo N. Yedlin's good friend Andrew Snyder in Randolph, Me., a very active collector who has a fine collection of Maine minerals and is doing expert lapidary work.

Roland E. DeCoteau of Augusta, Me., visited us while we were stopping in that city. He is working on an excellent idea, namely that of collecting photographs and stories of famous Maine crystals and gem stones. As many of these have gone out of the state to all parts of the world, DeCoteau thinks Maine ought, at least, to keep a record of their prize products in print. The late Herbert Haven, of Portland, Me., had intended to do this and had also a voluminous record of old Maine mineral locations and their production. Such a completed, up to date, job by DeCoteau would be a fine thing for Maine, with which to perpetuate her rich mineral history.

Newry, Me.

While we did not get up Newry, it has probably been the busiest place visited by collectors in the East this year.

It is a wonder that there is a stone left here, or on Mt. Mica and Noyes Mt., yet each place still produces fine specimens, after all of the years of their fame.

Harvard did some private blasting there, too, this Summer, for tourmalines.

The rarest of prize crystals from Newry, or any place else, were found

there this July. They were the largest rose quartz crystals known and remarkably deep red ones, too. The much visited Stanley Perham of Trap Corners, Me., has been given the sale of some of these crystals by the Whitehall Company of Keene, N. H., who do the mining. One perfect crystal is about $\frac{1}{4}$ " x $\frac{3}{4}$ " in size—no more glasses needed to see rose quartz crystallized.

Also on display in Perham's shop is a boulder of feldspar about 2' square. In the middle of one side is a pocket—about 6" wide—with hundreds of these rosy crystals in it—a most beautiful and rare sight for a mineral collector.

Stanley Perham

Perham has another new, unique display, in his shop worth seeing. It is a miniature model of the lower Newry feldspar quarry about 2' square—complete, in every detail, with all its minerals, as well as the bear, which frequents the place, too.

Cars are still lined up daily, in Summer, at Perham's with people from all over the world, who want to see and buy Maine minerals. He had another big write-up in the Oxford County paper and has had a fine set of postal cards made, for sale, showing his shop, minerals, quarries and details of the lapidary work that he does there with Maine gem stones.

The Putnams

My wife and I enjoyed our luncheon at Dorothy and Dana Putnam's home in Rumford Corner, Me. They are always a delight to be with and are still running the Oxford County Mineral and Gem Club. Dana has a fine new cabinet for his mineral collection, consisting of many cotton lined drawers; each one being covered by glass. This is a great asset to any collection for many reasons. It keeps the specimens dust proof and from being handled by inexperienced visitors. I have seen very fine crystals dropped and broken accidentally by people who did not know how to hold them.

The Putnams will be pleased to see all mineral collectors, at their home, at any time and any collector, when in Oxford County, Me., should include a visit to them.

Ike Skillin

Made several enjoyable visits to Skillin's mineral shop in Freeport, Me., where talks with him about Maine minerals and quarries were most interesting.

Other Places Visited

We also saw in Yonkers, N. Y., the Boyce Thompson Collection again several times, as well as that of Mr. R. H. Ford at Exeter, N. H., and those at Amherst and Dartmouth Colleges. Also frequented the shops of Hugh Ford and M. A. Hammonneau in New York City and Charles Marble, in Buckfield, Me. As we spent some time in Amherst, Mass., we visited the Schortmann Brothers' shop in East-hampton, Mass., many times, too. They have several famous American and European collections with very fine and rare collector's items, which are being prepared for their next New York sale. Don't miss it—or regret.

Dartmouth College

At Dartmouth College, Hanover, N. H., Dr. R. G. Chaffee is building up a collection of New Hampshire minerals and this museum is the ideal place for that state's best specimens. Local collectors should bear this in mind and see that their New Hampshire can boast of its own local mineral exhibit.

Amherst College

At the new Amherst Museum, Amherst, Mass., Raymond E. Schortmann is still busy arranging local dinosaur tracks, as well as minerals, under the supervision of Prof. G. W. Baine. They have one of the best modern, fluorescent displays in any museum.

Vincent Shainin

Called on Vincent Shainin at the University of Maine in Orono, Me. He has been very active all Summer out West, where he had an unfortunate accident. He was also beryl hunting for the U. S. Geological Survey, in Oxford County, Me. His new article "Preliminary Report of Pegmatites on Red Hill, Rumford, Maine" has just been issued by the Maine Development Commission in the report of the state geologist. Shainin has also

(Continued on Page 627)

NATIVE COPPER IN A N. J. QUARRY

By T. ORCHARD LISLE

Hearing that good prehnite could be obtained at the North Jersey Quarry Co.'s traprock quarry on the edge of the Watchung mountains, Bound Brook, N. J., I decided to take a look-see one Saturday early this Spring. Accompanied by my son-in-law, Charles Neal, we arrived at the entrance to the quarry just as a man—obviously an official—was starting to drive away. I hailed him and explained my mission. He very courteously got out of his car saying: "Come into the office, you're just in time." There he very kindly filled out a pass for our signature. After warning us of the dangers of falling rocks from the walls, and that we must be out by 4 p.m., he generously told us that the more likely sections of the quarry were at the South and North, respectively.

This is typical of the extreme courtesy I have experienced at many dozens of quarries and mines. Officials and owners have their responsibilities, but when properly approached are most cooperative. In my mineralogical wanderings I have only once been refused admittance after application, and that was at Franklin, N. J. The reason given there was that although the war was over, Washington had not given the necessary release. This was about three years ago.

The Bound Brook quarry official, whose name I unfortunately omitted to ascertain, showed us a piece of pure native copper about the size of a packet of cigarettes, which was part of a 120-lb. lump which got caught in the crusher last Fall, and stopped the machinery.

This piece of copper must have been thrown-up by rock movements in some geological era; but it is possible that the neighboring hills could contain commercial quantities of this red metal, having in mind that a little distance away is the abandoned copper mine at Somerville, N. J., where some years ago I collected small pieces of native copper and azurite on the old dumps. The dumps have been combed over many times by rockhounds, but they still may have collectors' material for those who will dig deeply and thoroughly. Demand for copper in the

U. S. A. is greater than the supply, the price is high, and customs duty on imported copper has been suspended by Congress for two more years. Therefore, it might be worthwhile for some company to make a careful geological and geophysical survey of the district for new sources of supply.

There is a small copper-bearing vein in the Bound Brook quarry in the South corner, near where a big blast will shortly be made—probably before this appears in print. We searched in vain for the exact spot, but it was like looking for a needle in the proverbial haystack. It is a huge quarry, more than twice the size of the one at Prospect Park, N. J.

However, we did find one small boulder of red shale which was full of cracks that were filled with azurite and malachite. When split at the cracks, colorful pieces were obtained about five inches across with a coating about $1/32''$ thick.

Following the quarry wall we slowly proceed to the North end, examining considerable rock enroute, but found no signs of anything else. At the South end, where a cable-tool drill was at work on top of the cliff, we did obtain some calcite, some of it crystallized, including small dog tooth crystals. That night I found that this calcite fluoresces a pretty blue under the Purple-X bulb. It also fluoresces under the Mineralite, but not so attractively. Some calcite we picked up at the South end did not respond to either lamp.

Unfortunately, we saw no traces whatever of prehnite, so came to the conclusion that our informant may have been thinking of some other locality. Incidentally, within a half-mile there is another large quarry which apparently has not been worked for a great many years. Its name is not known to the writer, or if any minerals have been found there. Perhaps some other reader of Rocks and Minerals can supply the missing information, and also write of his collecting experiences at the quarry now being operated at Bound Brook?

Mount Antero Mineral Park

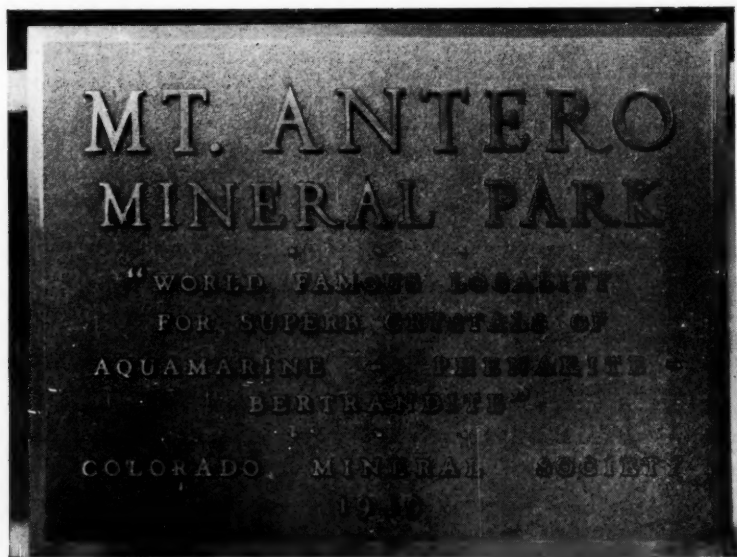
Mount Antero, noted gem peak in the Sawatch Range of central Colorado, was proclaimed a Mineral Park by the Colorado Mineral Society at colorful ceremonies held on Colorado Day, August 1.

A bronze table was set in a granite pinnacle just below the summit and not far from the site of the highest mine in the United States. This mine, and in fact the entire 14,245-foot mountain, has been a prolific producer of beautiful gem aquamarine and other rare minerals, which come from hidden pockets in pegmatite.

Although world famous since the 1880's as the highest mineral locality in North America, Mount Antero is still regarded as unique among American mineralized areas for its inaccessibility. Equipment for mining in the hard rock must be packed in along a trail that rises over 5,000 feet in seven miles. The Colorado Mineral Society maintained a field camp there during the summer of 1938.

Outstanding among the minerals that come from Mount Antero are unusual ones such as phenakite and bertrandite, and remarkably fine crystals of commoner minerals including smoky quartz, rock crystals, fluorite, and feldspar. One of the largest spheres of rock crystal in existence was cut from Mount Antero quartz and displayed at the Chicago world's fair in 1893; it is now in the Chicago Museum of Natural History.

Led by James Hurlbut, nine members of the Colorado Mineral Society climbed to the top of the peak over the holiday week-end. After the plaque was mounted, a proclamation prepared by a committee headed by Chester R. Howard was read and pictures were taken. When Mr. Howard was president of the society, he proposed this idea in recognition of Mount Antero's significance to mineral collectors. Other members of the committee appointed by Pres. Richard M. Pearl



Plaque set on Mount Antero, Colo., by the Colorado Mineral Society.



James Hurlbut drives the last spike in the plaque.

were Minor F. Wasson and Alice Gathercole.

First to reach the summit was 14-year old Tommy Hofer. Other members in the Antero party included Mr. and Mrs. Harold Hofer, Col. and Mrs. Olin Brown, Mrs. Alice M. Colburn, Mrs. Mildred Newell, Betty Burwell, Donald Brown,

LeRoy Brown, Robert Le Massena, and C. W. Hayward, and Muriel Colburn.

Rocks and Minerals has published some of the most interesting articles on collecting at Antero by Edwin W. Over Jr., and Arthur Montgomery in the issues of February, 1935, and December, 1938.

Sphalerite Crystals As Gems

If you have a piece of sphalerite, or blende, crystal clear and large enough to be cut as a faceted gem, it will make a ringstone three times as bright as a diamond, and one-and-a-half times as bright as a rutile. Its color dispersion is enormous, being over 0.156. Its refractive index runs as high as 2.371. It is found in conjunction with galena, and the best locations for gem quality material is Mexico and Spain.

started by Roy Johnson and Lewis Clark. If any reader pays a visit to this location it is to be hoped that he will send a sample to *Rocks and Minerals* for forwarding to the writer of this paragraph.

A BIG HOLE

Reports from Ecuador state that the village of Libeertad, Ecuador, disappeared into a hole half-mile wide and 1,500 feet deep, during the recent disastrous earthquake.

America's Hardest Granite

The granite quarried in Hancock County, Ga., is said to be the hardest in the United States, and it takes a polish like steel. The old Georgia-Quincy quarries near Granite Hill have been re-

Best On The Market!

Editor R & M:

In spite of some squawking I have done in the past, I still regard *Rocks and Minerals* as the best on the market.

M. R. EMERSON
Caldwell, Idaho

October 19, 1949

A STORY OF COPPER

By EDWIN S. ROTH

(Talk given to the Los Angeles Mineralogical Society, Sept. 15, 1949).

Mr. President, Members of the Los Angeles Mineralogical Society, and Guests:

I am very happy to speak to you tonight about a metal with which old and young are well acquainted. How many of the little children are not familiar with the beloved good old copper penny. So I have chosen for tonight's lecture, the metal from which these beloved pennies are made, namely Copper.

As Copper is a metallic element, it has no composition but it is designated by the symbol Cu. It belongs to the Isometric or cubic system and frequently is found in the form of tetrahedrons, octahedral plates, distorted, twisted wire-like shapes, filiform, granular and massive in conglomerates. These formations, however, occur in native copper. Copper has an atomic weight of 63.5, a valence of 1 plus and 2 plus, hardness of 2.5—3, and specific gravity of 8.8—8.9. It has no cleavage, a hackly fracture and a metallic luster. The streak is metallic and shining. It is opaque and the color is copper red. It is soft and very malleable. It dissolves readily in nitric acid and fuses at a temperature of 1080° centigrade.

Native copper usually, if not always, is of secondary origin.

The principal copper deposits may be grouped into two classes: First, deposits composed of sulphides with various gangue minerals and alteration products, and second in the zeolitic native copper ores. In the majority of sulphide deposits, chalcopyrite, by far, is the most common primary copper mineral. In some deposits, however, enargite is the primary copper mineral. Other deposits may contain one or more of the minerals, chalcocite, covellite, bornite, and tetrahedrite, as primary constituents.

Copper sulphur deposits are readily oxidized near the surface and there are found malachite, azurite, cuprite, chrysocolla, chalcantite, brochantite and native copper.

The principal secondary sulphides in copper deposits are chalcocite and covellite, although secondary bornite and chalcopyrite are not uncommon.

As a rule the secondary sulphides are found below the zone of oxidation.

The reduction of copper minerals or solutions so as to produce native copper may be precipitated from a sulphide solution by the action of organic substances, as in the case of the action of wood on mine waters, and by the oxidation of iron which may occur in sulphide minerals.

Copper is one of the oldest and most important basic metals and it is used in thousands of industries all over the world. All cables transmitting light and power, telephone, telegraph and cables across the Atlantic, contain copper wire. It is used in the manufacture of practically all electrical equipment, autos, airplanes, radios, and in the rails for the railroads. It is also used as an alloy for coining money, and in jewelry, as well as for cooking utensils and other household articles for ages past. It has also been used for fine objects of art, and when it is mixed with zinc it produces the metal brass. When copper is mixed with tin it produces bronze, which is widely used in the making of statuary, figures, and many other fine pieces of art.

Copper is very widespread and occurs practically in every continent of the world. I have the statistics up to 1938 showing the world production of copper and have selected two of the most important countries, from the four leading producing continents, as follows:

North America	46.7%
U. S. A.	33.3%
Canada	10.5%
South America	19.9%
Chile	18.2%
Peru	1.55%
Africa	16.4%
Rhodesia	9.33%
Katanga	6.59%

Europe	10.5%
Russia	4.06%
Yugoslavia	1.73%

No doubt you have heard about the copper deposits of the Keweenaw Peninsula in the Lake Superior region. These deposits extend for 125 miles and for ages were worked by Indians, and frequently prehistoric implements are found there. Not until 1846 did white men start to mine the copper there.

In this region is situated the famous Hecla mine. It is the deepest copper mine in the world, being 5,000 feet deep, and became famous on account of the fabulous amount of copper brought to the surface. The copper which is mined there is practically all metallic native copper.

In 1857 the largest piece of native copper was found there weighing 420 tons. It was so large that it could not be brought to the surface and efforts to chisel it apart were of no avail. The use of a torch was also prohibitive as the copper is too great a conductor of heat. Neither could it be blasted apart as it is too malleable. The only thing left for them to do was to leave it in the mine and tunnel around it, which they did.

The copper in that region occurs first as a filling in sandstone and conglomerate in large part replacing the grains and pebbles. Second, in the filling of amygdaloidal cavities in the trap, and third, as veins which traverse all kinds of rocks. The copper there associates with prehnite, datolite, analcite, laumontite, pectolite, epidote, chloride, wollastonite, calcite and other minerals.

For many years the Hecla mine was the principal copper producer and he'd first place in the production of copper in the U. S. A. until copper was discovered in Butte, Montana. Such enormous amounts of high grade ore were taken from the mines in Montana, that the Hecla mine had to bow down to Butte and take second place.

The principal ores mined in Butte, Montana, are chalcocite, bornite, covellite, chalcopyrite, and enargite, but there are also other ores of lower grade, such as digenite, colusite, tenorite, melanconite and

azurite.

Of all the mining towns, Butte, Montana, has one of the most interesting history. Originally, Butte was a gold mining camp, and more than 20 tons of gold were taken from its mines. When gold gave way, Butte almost became a ghost town. Then the mines started to produce silver, but with little success, until 1875 when the rich Travona lode was discovered. Butte, Montana, then enjoyed another boom. More than 4,000 tons of silver were taken from its mines. Gradually the price of silver dropped to such a low that the mines could no longer work with any profit and most of them shut down. Only a very few kept struggling along. The miners left Butte and business houses closed down. Dance halls, saloons, and in fact almost everything else closed down and Butte was not far from going out of existence, when all at once the Anaconda Silver Mine discovered the enormously rich deposit of copper. At once they started to mine for copper and many of the mines which had closed down re-opened and mined for copper. Butte, once more enjoyed another boom and prosperity reigned once more, and up to this present day Butte is still mining copper. Then Butte held first place in the production of copper for many years.

When copper, however, was discovered in Utah, Arizona and Nevada, Butte had to take a step back. There the copper is of a low grade but such enormous quantities of ore could be worked daily in open pits with steamshovels at a much lower cost, and a greater profit than it could from underground tunnels, as at Butte.

In 1907 Arizona came to the foreground in the production of copper and held its place ever since.

In Utah, Nevada and Arizona, are many localities which are noted for the great variety of beautiful copper specimens which come from their mines, particularly in the oxidized zone. In Utah, from the Tintic District, and Bingham Canyon, fine specimens of chalcopyrite, tetrahedrite, conicalcite, linarite, beaverite, berzelianite and mixite.

In Nevada from the Myler mine, Pershing County, come some extra fine specimens of spangolite, olivenite, zeunerite, leucochalcite, chalcophyllite and tyrolite. From the Empire, Nevada mine, Yerrington, Nevada, come fine specimens of cornetite, libethenite, cyanotrichite.

In Arizona, from the well known Mammoth mine in Tiger, Arizona, comes the beautiful diopside, associated with wulfenite, diabolite, atacamite, caledonite and mottramite. From the Copper Queen Mine in Bisbee, Arizona, comes outstanding azurite, malachite, cuprite, chalcotrichite, aurichalcite, brochantite and excellent crystallized native copper. From the Miami Copper Mine, in Miami, Arizona, comes the high grade chrysocolla and very fine turquoise. From Morenci, Ariz., the marvelous chalcotrichite in needle form, a specimen hardly obtainable any more, also grand native copper in crystallized form. Higginsite from the Higgins mine in Bisbee, and Shattuckite, and Bisbeeite from the Shattuck mine in Ajo, Arizona.

Copper and gold were the two oldest metals known and between 4000 and 5000 years B. C., the ancient people were well acquainted with these metals, and on account of their softness and malleability knew the value of using them for many purposes. From them they made implements and ornaments. Turquoise was highly treasured by them, and amulets as well as other ornaments for women and children were made from this colorful copper mineral.

I have a little story to tell you which will be of interest to you, so I will take you now to Peru in South America. Ages before America was discovered by the white man, the Inca Indians in Peru were familiar with the soft red metal copper. They soon discovered how to mix tin with copper, producing an alloy known as bronze, which was harder than copper and was of much better service in making implements and weapons than copper alone was.

Although there were mountains of copper, copper was rather scarce, as the ore was of such a formation that to extract the metal required a complicated

chemical process with which the Indians at that time were not familiar. They knew how to smelt and therefore only high grade ore and native copper were of any use to them, and those ores were rather scarce. They only found it as outcroppings of veins and their supply of copper was soon exhausted.

The Indians were compelled to tunnel into the mountain side in order to keep up their supply of copper. Each Indian owned and operated his own tunnel. The tunnels were only large enough to accommodate the body of one man so they extended these tunnels deep into the mountain side.

At the foot of one of these mountains, in a fertile valley, lay the little prosperous village of Chiquikuma. The women took care of the homes, attended to the farms and were fine weavers. The male population were all copper miners. They liked their work and were eager to bring as much copper out of the mines as they could find.

Among the Indians was one who had more luck in bringing out more copper from his mine than the others. His name was "Caspy Coyote". At the end of the day the miners usually went home together but one evening Caspy Coyote did not join them. They thought he was working a little longer and started homeward. When he did not show up they stopped and looked toward the mountain to see if he was coming but all they could see was a rubble of rocks where Caspy's tunnel used to be. At once they realized what had happened. His tunnel caved in and he was buried under thousands of tons of rock. Saddened over the loss of their comrade, they went home and broke the news to his wife and son. As it would have been quite a job to excavate his body, they decided to leave him where he was buried in his tunnel. As time went on Caspy was forgotten. Then white men came, clad in iron with weapons in search of gold. Disappointed and angry over their failure to find any, they razed the village, destroyed the farms, killed the women and children and enslaved the Indians who did not escape into the mountains.

Centuries later other white men came, but not with weapons. They brought steam shovels, built railroads, erected smelters and almost over night a town sprang up where once Chiquikuma used to be. They started to blast the copper mountain and thousands of tons of ore were moved daily.

One day a foreman from the company walked along the edge of the mountain to inspect a vein and accidentally stumbled over a pair of legs protruding from under-

neath the rocks. Carefully they removed the rocks with great care and recovered the body. Once more Caspy Coyote came to light. Although his head was crushed, the remainder of his body, even his stone hammer in his hand, was in perfect condition, petrified and turned to copper.

His body can now be seen in a glass case in the museum of natural history in New York City. The Inca Indian "Caspy Coyote" whose body completely turned to copper.

BIBLIOGRAPHICAL NOTES

The Story of Jade: By Herbert P. Whitlock and Martin L. Ehrmann.

This is the most thorough coverage of Jade to be published. It is Mr. Whitlock's master work on Jade completed just before his untimely death, and arranged for publication by Mr. Ehrmann. It is a most handsome book, printed in large type, and beautiful illustrated. The authors have tried to tell the story of Jade in terms of its mineralogical interest and esthetic appeal, especially in ways which the people who so skillfully fashioned it intended it to mean.

The book is divided into 10 chapters as follows: Jade: The many colored jewel of heaven; The Jade of Ancient China; Dragons, phoenixes and other creatures; Taoist symbols; Gods and immortals; How Buddhism influences Chinese carved Jade; Salutations and inscriptions; Bowls, cups and other containers; Beads, buckles and other articles of adornment; Various objects carved from Jade.

This handsome book, 7½ x 11 inches in size, contains 222 pages and 179 very fine illustrations (6 in color). Price \$12.50.

Published by Sheridan House, 257 Fourth Avenue, New York 10, N. Y.

Industrial Minerals and Rocks

(Nonmetallics other than fuels) 2nd edition

To anyone interested in industrial minerals and rocks, their occurrences, properties, preparations, uses, prices, etc., this book contains the most complete data ever published. There are 51 chapters in the book covering the industrial minerals and rocks arranged alphabetically from abrasives to vermiculite and each chapter has been prepared by an expert in his field. Among the chapters is one on precious stones (by Sydney H. Ball) and another on quartz crystal (by Robert B. McCormick). A valuable bibliography appears at the end of each chapter. *Industrial Minerals and Rocks* should be of special interest to collectors because it not only gives localities, domestic and foreign, of many minerals such as barite, corundum, fluorite, garnet, kyanite, monazite, sillimanite, witherite, zircon, but also lists the uses of them all.

1156 pages, 6 x 9 inches, illustrated. Price \$8.00.

Published by the American Institute of Mining and Metallurgical Engineers, 29 W. 39th Street, New York 18, N. Y.

Grieger's Encyclopedia and Super-Catalog (1950 Edition—\$1.00)

This is the most elaborate catalog and price list for the lapidary and gem cutter ever published. It is 9 x 12 inches in size, contains 192 pages and is beautifully illustrated with hundreds of very fine photos, drawings and sketches. There are at least 60 pages of instructive articles by writers of national fame.

Published by Grieger's, 1633 E. Walnut Street, Pasadena 4, Calif. Price \$1.00.

Minerals Unlimited Issues 3 Catalogs

Minerals Unlimited, 1724 University Ave., Berkeley 3, Calif., have issued 3 catalogs for 1950. One catalog of 14 pages features "Fine Minerals" (from Acmite to Zircon). Another is a "General Mineral Catalog". This is a 53-page publication which features minerals (from Actinolite to Zircon), mineral collections, collector's equipment and books. The third is a "Lapidary Catalog", a 21-page publication which lists chiefly rough gem material for cutting and polishing.

Gem Exchanges Issues 1950 Preliminary Price List

This is an attractive 3¼ x 9¼ inch, price list of 18 pages which features many interesting minerals from domestic and foreign localities. Books and gem cutting supplies are also featured.

Issued by Gem Exchange (Gem Village) Bayfield, Colo.

Publishing House Changes Name

The Manual Arts Press of Peoria, Ill., has changed its name to Charles A. Bennett, Inc., in memory of its founder and in celebration of its 50th Anniversary.

This well-known company is the publisher of "Gem Cutting", by J. Daniel Willems, one of America's most popular books among lapidaries.

THE NORTH CAROLINA GOLD RUSH OF 1842

By JEFF HILL

1936 Smallwood Dr., Raleigh, N. C.

North Carolina had a full-blown, knock-down drag-out gold rush with saloon brawls and all the trimmings which preceded California's by seven whole years. The trouble was: it lasted only that long. Gold mining continued right along after the California discovery, but the fever was gone as most of the prospectors deserted their North Carolina claims for the greater promise of the California gold fields.

Seven years is a long enough stretch, however, for legends to grow and fortunes to be made. With cheap operating costs fortunes were indeed made, and campfire stories and anecdotes are legion. It is even reasonable to assume that some of the tales told of California's '49er's days were in truth legends transferred from North Carolina's '42er's days.

It was during the North Carolina rush that an unknown soldier of fortune, P. T. Barnum, got his start as an entertainer. Failing miserably at prospecting at the Portis Mine in northern Franklin County, he organized a minstrel to entertain the other prospectors, and did very well in this. Leaving North Carolina, he went north to hire new acts and paraphernalia for his show. Returning again to North Carolina with the whole ensemble, he gave the gold miners a real show for their money and dazzled them with the first elephant ever seen in North Carolina.

For a cut-and-dry gold assay (\$25 per ton of earth over considerable acreage) not many places can rival the North Carolina gold fields. A draw-back is inevitable: the gold is mostly in a dust-fine powder, thoroughly mixed with tough red clay which when wet is as hard as cold butter, and brick-hard when dry. Moreover, it is nearly impossible to keep the earth broken down into "soup" long enough to separate the gold. The gold is therefore tedious and costly to separate. The problem has stumped generations of experts; its solution would doubtless make a millionaire of someone.

Just the same, more than \$60,000,000 worth has been removed from North Carolina since its discovery by a 12-year old Cabarrus County boy who found a \$3,000 nugget in a creek while fishing, playing hooky from church one Sunday morning. This story is authenticated—the boy was Conrad Reed, the year was 1799, and the creek was Meadow Creek near Concord.

The heavy gold nugget, larger than the boy's fist, served as a door stop in his home for three years or more, but was sold in 1802 by his father, John Reed, a Cabarrus County farmer, to a Fayetteville jeweler for \$3.50. The \$2,996.50 balance of its worth was given the Reeds later when a more generous appraisal of the nugget was made, the story goes.

That isolated incident seemed not to have caused a great deal of stir, since it was all of 40 years later that the gold rush began, but when it did begin, it did so on a nation-wide grandiose scale with all the fuss and flurry and high prices that characterized the California rush.

Most of the excitement was in Rowan County where in 1842 an almost unbelievable 400-foot vein had been discovered on Andrew Troutman's farm which was soon dubbed Gold Hill. In eight years it had yielded more than \$800,000. And according to the *Lexington & Yadkin Flag* of February 22, 1856, it still paid off at the rate of \$10,000 a month even as late as 1855 when monthly expenses amounted to only \$3,389. It must be remembered that this mine as well as all others in North Carolina at this time were operated by slave labor at minimum expense.

It is reported that four to eight slaves with gold pans alone could fill a quart jar with gold dust and nuggets from a vein near the town of Dysartsville in the Stone Mountains. An incidental geological record of this time reports that 3,000 slaves worked the gravel deposits of the mountain streams in Piedmont and western North Carolina at the height of the

rush in Rutherford, McDowell, and Burke Counties. The Old North State from then until 1849 was easily the leading gold-producing state of the Union.

When all the smaller veins were exhausted, there yet remained the great Rudisil Mine in Mecklenburg County, the Whitney-Isenhour group in Rowan County, and the Portis Mine in Franklin County. These mines are no longer operative and are in melancholy ruins, but the writer had the opportunity of visiting the last of these under the tutelage of Mr. Phil Sturgiss, the present owner of the Portis Mine tract, whose forebears had owned and operated this mine during its production peak.

The mining experiences related by Mr. Sturgiss were much the same as those told generally of North Carolina gold mining: the difficulty of separating the gold from the tough clay, the liberation of the slaves raising the cost of labor to an almost prohibitive level. . . that there was still a fabulously rich amount of the precious metal yet untouched.

To demonstrate the latter, he filled a gold pan with earth from the ditch in front of his house, sank the pan into a tub of water, and began panning as one would in a stream. The difficulty of separating the gold became obvious. Constantly kneading the hard clay into mud with his fingers, the mixture would yet separate into clear water and hard clay in the bottom of the pan almost before he could grasp the pan to lift it to spill out the light-weight earth in suspension. It was uncanny to watch the red soupy mixture precipitate so quickly into hard clay and then roll into balls exactly like snow pellets that grow into balls when rolled across a snow field.

However, the concentrates left from this one pan of earth after much repetitive labor revealed remarkably good rich color—the gold dust tinted the black sand (magnetite) a decided yellow, and in the concentrates was a small pure gold nugget the size of a grain of rice.

Aside from the difficulty of separation,

there is the financial consideration of having to haul or pump water for the gold separating machines as the gold is mostly in the hills, while the springs are in the valleys, often some distance away. There is also another very important financial consideration which most beginning prospectors are apt to overlook entirely: that of disposing of the tailings, the mud run-off from the separating machines. In a large operation this becomes a weighty problem as the tailings soon cover acres and acres of land with hard red clay, and this land too must be bought by the mining enterprise, as it renders the land worthless for farming. Law suits have arisen from this, and several profitable mining operations in North Carolina were forced to close and sell out to pay adjacent property owners for their ruined farmland.

Apparently overcoming all natural difficulties, the Portis Mine was operated early in this century for a while with great success. A theft of a large store of gold by one of the trusted workmen sent the operation into financial ruin, however. Part-time gold mining (more for recreation than profit) brought \$4,000 worth of the precious metal to market from North Carolina in 1944, the last record available. Some of these same acres were also profitably mined for iron on a small scale during the past war. It has been demonstrated by geologists that the North Carolina gold fields are acre for acre still as rich as during their days of profitable operation, with remaining large stretches of land yet unexamined for gold veins which could conceivably equal those which precipitated the rush of '42.

Not the least bothered by these things and probably unaware of the golden days of '42, is an old Negro in Granville County who still makes his bread and butter on a tiny stream bed claim with a rickety home-made sluicibox, leading a lazy and philosophic life, but bringing a small bottle of gold to a neighborhood general store every Saturday. A good thing to remember if pessimistic predictions of a depression come true. Perhaps the old darky will see some excitement then.

COMMENTS ON LIMONITIC "FULGURITES"

By HERBERT O. ALBRECHT

Bartol Research Foundation, Swarthmore, Pennsylvania

Jeff Hill's highly original articles on fulgurites seem to me the best possible general sort of material for *Rocks and Minerals*. Language may be simpler, treatment less detailed and topics more varied and personal than in professional papers, but this subscriber thinks that some degree of originality should be the top qualification for appearance in a magazine for amateurs—as much so, say, as in the *American Mineralogist*. A. J. Boucot also deserves special praise for his modest account of a nervy invasion of the old Ecton Mine, right under the noses of the local mineralogists—not to say, speleologists.

Hill's speculations concerning limonitic fulgurites were known to me, before publication of his articles, through the generosity of himself and Harvey Franz in sending me samples and comments thereon. While I have not yet seen the localities where the objects are found, and thus lack an important factor in competent judgment upon them, perhaps my comments on the problem of their origin will help along the discussion which Mr. Hill's articles well deserve.

Since the small samples in my possession look closely like common concretions from places where the action of lightning seems definitely excluded, I was at first inclined to think any indication of fulguritic origin was merely coincidental. I am still skeptical that these tubes are ordinary fulgurites, or weathering products thereof, but the chance that they are even more interesting formations in which lightning had some determining influence seems definitely given.

A simple and important fact which Hill does not mention is that limonite heated to a moderate degree becomes hematite, and then magnetite considerably below the temperatures reached by quartz fulgurites. (Thence the gray color when yellowish sand is fused). These non-magnetic tubes are thus either:

(1) thoroughly weathered products of

original fulgurites,

(2) curious "compactions" formed at temperatures of only a few hundred degrees, but capable of withstanding weathering,

(3) secondary depositions (i.e., concretions) induced by lighting in some manner, or

(4) non-fulguritic material.

I suspect the curious longitudinal groove is due to gravity and represents the top side of the tube. If so, this speaks against (1) and (2). A decaying rootlet, for instance, oozing an acidic and leaching, or reactive and insolubilizing—but in any case deoxygenating—liquor onto iron compounds in the vicinity, would have its zone of activity chiefly below, due to gravity, and above itself only due to diffusion and capillarity. The same action which causes the limonite ultimately to be deposited at a distance from the rootlet might thus cause a thinner deposition at the top. (The rarer solid cylinders are not grooved, is my guess.) The chemical and colloidal details of this interesting reducing and leaching, precipitating, and ultimately oxidizing, process are not thoroughly worked out, as far as I know. It bears a similarity to the ordinary corrosion of iron, where the metal, itself, instead of organic material, may later reduce ferric to ferrous compounds (as well as initially yield ferrous solutions) in the by-no-means simple process of rusting. The only slightly consolidated Cretaceous and overlying beds of the Atlantic coastal plain offer examples on the grand scale of leaching, formation of tubular and other concretions, and impregnation of whole formations with ferrous, and still partly soluble, iron—a fertile field for amateur investigation.

The absence of fulguritic action in the sands surrounding the ferruginous areas is one of Hill's most striking observations. I think it likely that this "protective" action meant more strokes in the more

conductive area, and not "silent discharge" or the like. Thus, I agree with Hill that intense lightning occurred in the areas in question. If plant life was present, the currents followed roots to a considerable extent, and thus a juxtaposition, at least, of concretionary and fulguritic activity is readily accounted for. That rootlets traversed, and probably carbonized, by currents too small to melt the surrounding mineral matter might produce concretions of a special nature or frequency seems clear, and conversely, concretions already formed might be indurated or otherwise affected by strokes. For the reality of some such connection of electrical and concretionary activity, I think the peculiar distribution of the limonite tubes gives the strongest suggestion, and their great abundance perhaps the most negative evidence.

The absence of *considerable amounts* of silicate glass or lechatelierite in at least *some* of the tubes to my mind practically rules out origin (1). The shapes and sizes of some of the pieces illustrated by Hill would indicate the cooperation, at least, of roots, if hypothesis (2) were to hold, despite the grooves. (2) seems closest to Hill's own hypothesis.) The enclosure of an obvious *fragment* of ordinary sand fulgurite in a limonitic mass argues clearly for a purely concretionary origin of this particular limonite, at least, and the find thus, to me, is unfavorable to Hill's hypothesis.

A very reasonable facsimile of ordinary fulgurite can easily be made by high tension discharges in sand. I have not attempted experiments in ferruginous material because of lack of knowledge of a mixture which would be fairly representative of the soil on the Lake Michigan shore areas. However, I surmise further geological ingenuity, rather than laboratory work, will prove the more direct key to the present mystery.

Hill does not state how good the evidence may be for original beds of red clay at the sites, rather than for the possibility that leaching and the activity of plants concentrated iron in these areas. I well know by personal experience how certain subtle facts about Indian artifacts

and sites become plain by long-repeated observation which are entirely unconvincing to the otherwise competent critic who has not been "through the ropes". Perhaps Messrs. Hill and Franz already know "in their bones" that these limonite tubes have something to do with lightning. In any case, there is room for more of the fascinating detective work they have launched so well. Contributions of a quite different nature may also be made to electrical and geological theory, by further pursuit of this rare hobby of hunting Jove's foot-prints.

Gift Bags at Convention

At the Rocky Mountain Federation Convention held in Albuquerque, New Mexico, August 25-27, 1949, an attractive black cloth bag (mineral bag with shoulder strap) was given to everyone who registered. One of these nice bags, 9 x 12 inches in size and containing 6 fine minerals, was sent to the Editor of *Rocks and Minerals* by Robert Roots, of Denver, Colo. It is a very appropriate souvenir and one that should be treasured by every recipient who was there. The following appears on the bag: Rocky Mountain Federation of Mineral Societies—1949 Convention. Hosts—Albuquerque Gem and Mineral Club, Albuquerque, N. M., August 25, 26, 27.

The following letter was also received:

Dear Editor:

Am sending you by mail a package containing one of the gift bags given to all those that registered for the Convention of the Rocky Mountain Federation of Mineral Societies at Albuquerque, New Mexico.

The idea was that of the Albuquerque Gem and Mineral Society. The gift bag contained a number of specimens collected by members of the Society. The bag was handy also to carry away any specimens you might collect.

As this gift bag was to me, at least, a new idea, I thought that you might care to have one as you were unable to attend in person.

ROBERT ROOTS,
Denver, Colo.

September 13, 1949.

SOME RECENT FINDS IN MAINE AND NEW HAMPSHIRE

By DAVID M. SEAMAN

Associate Curator, Mineralogical Museum,
Harvard University, Cambridge, Mass.

The past summer I made a number of collecting trips to Maine and New Hampshire with members of the Harvard mineralogical department, the Boston Mineral Club, or on my own. Harvard put in a few blasts at the upper quarry at Newry, Maine, in August but got very little in return, none of the colorful tourmalines like those found by Nevel in 1926 and 1927. The Whitehall Company worked the lower pit at Newry, Maine, during the summer for feldspar and the large spodumene crystals which occur there. In the material from the lower pit and dump were found excellent spodumene crystals one of which approaches hiddenite in color, cassiterite crystals, massive triphylite and a few crystals, columbite crystals, excellent small radiated groups of fairfieldite crystals, tiny pyrite crystals, and small quartz crystals. The Whitehall Company has on display at Perham's Mineral Store at West Paris, Maine, a large block of pegmatite on the top surface of which is an area near the center about 3" x 4" covered with a thin crust of beautiful rose quartz crystals some of which reach a quarter of an inch in length for which they ask six hundred dollars. This block is from Newry.

On the east slope of Mt. Mica at Paris, Maine, a new pocket about two to three feet in height and breadth, and about eighteen feet in length, was opened up in a renewal of working there near the base of the quarry. This may be a continuation of one of the mineral zones of Mt. Mica itself, out of which were found a large number of very interesting, flattened and somewhat distorted colorless, caesium-rubidium beryl crystals which are being studied at Harvard at the present time. Many of them are very much flattened and elongated in the prism zone and do not show nice hexagonal cross sections as does most caesium beryl crystals. Again most caesium beryl crystals have relatively short prism faces

while these are much elongated. The crystals were originally thought to be amblygonite or topaz. The beryls were of chief interest but the pocket also yielded a large number of smoky and colorless quartz crystals and groups of albite crystals the latter often intergrown with muscovite crystals. Some tiny flattened columbite crystal plates were found in vugs in the albite and some arsenopyrite or lollingite near the pocket itself. The pocket was opened up in August. The deposit is being studied by the Department of Mineralogy and Petrography of Harvard University.

August also saw the finding of brazilianite from a second New England locality, also in New Hampshire. The first crystals were found by Mr. Gunnar Bjareby and Dr. Howard Evans both of Boston at the Smith Mine at Chandler's Mills near Newport, New Hampshire, a locality famous for the excellent triphylite crystals found there. Some triphylite crystals were found the past summer reaching two inches in length and about the same in diameter in the dumps. The best brazilianites are tiny colorless crystals reaching about a quarter of an inch in length, rarely found coating tiny colorless apatite crystals, though Dr. Evans has one group of pale yellow, transparent brazilianites on pale purple apatite crystals. Larger brazilianites form groups of parallel growth up to an inch or more in length in vugs in the albite. Some of the groups of the larger crystals are somewhat radiated. Other interesting minerals found at this old quarry are tiny quartz crystals, small areas of lazulite the latter of which seem to be associated often with areas of granular, greenish-yellow apatite, and a new mineral being studied at Harvard. Some yellowish uranium minerals are also present and some grains and irregular crystals of brownish-red garnet. The brazilianites were identified at Harvard by Miss Mary Mrose. They are however not as fine as those from the Palermo Quarry

at North Groton, New Hampshire. The larger crystal groups are milky white in color.

The Beryl Mountain locality at South Acworth, New Hampshire, is being worked by the Ashley Mining Company for beryl which occurs in large greenish blue crystals and golden beryl crystals up to two feet or more in length and width. Several carloads of beryl have been shipped from this working. Some very interesting minerals have been found by Mr. Ashley during the course of operations and by a number of collectors who have visited the locality, as bertrandite pseudomorphs after beryl crystals mostly of the golden variety in which the beryls have been almost completely replaced by bertrandite which shows crystal forms in hollow sections within the beryls. Perfect quartz pseudomorphs after beryl crystals have also been found. Often these show

a core of beryl surrounded by quartz. One crystal may show beryl at one end which itself may have been changed into nearly a pure mass of bertrandite while at the other end of the beryl crystal the mineral may be entirely replaced by quartz. Some wardite crystals, (quite unusual for New England pegmatites), smoky quartz crystals, columbite crystals and very excellent bertrandite crystals, the latter reaching nearly a half inch in length, were obtained by Mr. Ashley and are now in the Harvard Mineral Collection. Some rose quartz may also be collected here from an outcropping on the side of the mountain below the quarry workings. The golden beryl crystals approach a gemmy quality and some true gem beryls may yet be found at this locality. It is a very interesting place to visit if only to see the zones of the beryl crystals in place on either side of the central quartz mass.

THE MIDWEST CONVENTION

By JOHN F. MIHELIC

It was a very busy convention, that gathering of the Midwest enthusiasts at Davenport, Iowa. They came to hear, see, and do, and that is exactly what they did. (Aug. 26-28, 1949).

Curiosity as to what the other fellow is doing is always a healthy sign. Measured by that standard, the Midwest folks exhibited every sign of health. They found the Davenport Public Museum an excellent place in which to arrange their own display. Here were exhibited cases of fine minerals specimens, polished petrified wood sections and agate, tiger-eye, datolite, porphyry as well as many other slabs, marvelously patterned "butterflies", and a host of superb facet cut and cabochon gems. The juniors added their concept of what constitutes good collecting, and even at this stage are showing the benefits of a good fund of information. A wide range of equipment and instruments excited much comment.

The hearing part was good too. The diagrammatic explanation of the being of the Grand Canyon was welcomed by all who visited it or plan to go there some day. Illustrations of what constituted effective display cases was a new feature.

Views of Canadian collecting areas aroused the wanderlust. Photomicrography and the technique of mineral photography were very well presented. The use of instruments for precise gem cutting and a summary of the latest scientific approaches to lapidary techniques was matter of interest to all.

The newly elected officers are:
President, Charles A. Preston
Vice-President, James O. Montague
Secretary, John F. Mihelcic
Treasurer, Hubert W. Ward
Historian, Ben Hur Wilson

As has been proved repeatedly in the past, an auction is one of the best ways to increase the treasury, something that is essential to every society. The Midwest auction proved its worth.

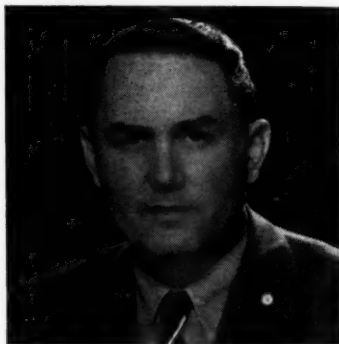
Recognizing the fact that many of the societies used the words "Mineralogical" and "Geological" in their names, the convention adopted the use of both terms in the name of the Federation. Articles of Incorporation were agreed upon.

Yes, it was a successful convention, and a promising forerunner of the next national convention, of which you will be hearing more in the near future.

A NEW SOCIETY IS BORN

By CLARK HARRISON

Out in the middle of the great Mojave Desert another mineral society has come into existence—the Rand District Mineral & Gem Association, of Randsburg, California. There are 30 charter members, ranging in age from four months to 82 years. It was organized in June with an election of the following officers: O. L. Jones, president; Alfred Hunt, vice president; E. S. Kirkland, treasurer; Kathleen Jewell, secretary. On Aug. 7th they made their first field trip—to Goler Basin, securing many nice specimens of jasper. This society is sponsored by the Kern County chapter of the Western Mining Council.



O. L. Jones, President, Rand District Mineral and Gem Association.

Randsburg is a picturesque mining town of about 500 population, on a good paved road, 150 miles north of Los Angeles. It is one corner of the famous Rand Quadrangle, a mecca for miners in the heyday of the gold boom here a few years ago. Three other small towns comprise the boundaries of this district, Johannesburg, Red Mountain and Atolia. This district is situated near the top of low lying mountains above the desert floor, and within a radius of 50 miles it is claimed that every element can be found, including fossils, sands and many kinds of gemstones. Some of the minerals that may be found close at hand are talc, zoisite, mariposite, agates, chalcedony, sardonyx, fire opals, wood opals, thunder eggs, manganese dendrites, tremolite, actinolite, silver, lead, and copper ores. Millions of dollars in gold have been taken out of the mines, especially the Golden Aster, a couple of blocks above the town. Much of the U. S. supply of tungsten comes from the mines at Atolia.

The Desert Museum in Randsburg houses a collection of minerals and ores of this district. A rock dinner of local minerals, plus a set of huge fossil teeth for consuming same, is one of the interesting highlights of the museum. Another is its collection of fluorescent and phosphorescent minerals.

O. L. Jones hails from Indianapolis, Indiana, and has been in Randsburg 3 years.

He is principal of the high school and his wife teaches in the grade school. Jones has a nice collection of small specimens in cellophane bags with data on one side, which he uses in teaching mineralogy. The student tries to identify the mineral, then he can check by turning the bag over and reading the data. He has a specimen of torbernite, a hydrous uranium and copper phosphate ore, found in this district. Jones and his family fell in love with the desert when they first saw it.

Alfred Hunt operates the Cottage Hotel. He was formerly connected with mining companies in this area and retired to the desert to settle down.

E. S. Kirkland is an auto repair man and miner. He is also Randsburg's lapidary. In his collection is some smoky quartz which appears to be jet black.

The secretary, Mrs. Kathleen Jewell, came from Santa Barbara, California, years ago. She didn't like the desert at first but has grown to love it. Ten years ago her husband passed away and she has continued operating his grocery store on Main Street. Her courage and fortitude has made her one of the leading business people of Randsburg. She, like so many of the others there, believe in the vast potential wealth underground there, and believe that as soon as the government unfreezes gold, putting it on a world



Dreamy little town of Randsburg, Calif. Near the top of the mountain saddle may be seen the tailings and the Glory Hole of the famous Golden Aster—\$16,000,000 goldmine.

market, that this district will again boom, supplying jobs for thousands of workers. Most of the mines are closed, for they claim that the low price of gold, high price of materials, machinery and labor, and long distance from markets prevent them from reopening.

At this writing the new society is all abustle getting ready to present displays of minerals in the Rand District Old Time Mining Celebration on Aug. 20-21, which will probably attract thousands of visitors. Also, they are planning display presentations at the Kern County and San Bernardino County Fairs later in the year.

Though a small group, they plan a big schedule of activity. Theirs is a golden heritage—unlimited in one of the highly mineralized districts of this country; a beautiful desert country with a potential future, and a past rich in exciting events.



Kathleen Jewell and her jeep in which she hunts minerals over the desert. In the background is the high school and back of that is the famous Golden Aster mine.

Original Subscription Received July 3, 1929

Editor R & M:

Enclosed is check for renewal.

After all these years, I like *Rocks and Minerals* just as much, if not more, as time goes on.

MRS. B. H. BIRCHALL
Philadelphia, Pa.

October 24, 1949

Don't let us miss a number!

Editor R & M:

Please excuse the delay in this renewal but—don't let us miss a number!

MR. & MRS. JOS. J. NORMART
Tucson, Ariz.

September 8, 1949

Better Than Home Town News!

Editor R & M:

We are seriously considering starting a rocks and minerals, and handcraft gift shop, in this area. Quite naturally we can't afford to miss a copy of *Rocks and Minerals*. It is better than reading the home town newspaper.

Remember the ad I ran last winter and spring? Well it brought 39 of the nicest swappingist friends one could ask for. Results of those ads were very gratifying.

CHARLES GRITZNER
Yuma, Ariz.

September 16, 1949

THE AMATEUR LAPIDARY

LAPIDARY NOTES

By J. HARRY HOWARD

504 Crescent Ave., Greenville, S. C.

Great progress has been made in the technique of amateur gem cutting in the past few years. Several factors are involved.

1. New tools and equipment have become available.

2. Greatly increased experimentation.

3. The kindness of professional lapidaries who have passed on to amateurs the findings of their own many years of work. Many of the ideas in this paper were given the writer through the kindness of general lapidaries.

The purpose of this paper is to put down some of those ideas which I have either not seen in print, or that may have not been sufficiently stressed. Because it is more or less a picking up of loose ends, it will be rambling in nature.

One of the quite important recent developments is the marketing of polishing powders such as Linde A. Those who have tried it extensively, both amateurs and professionals, proclaim it the one true, all purpose, powder. It works, and in a fairly uniform manner, on all gems ranging from quartz to topaz. (That embraces practically all gems except chrysoberyl and corundum and these will be mentioned later).

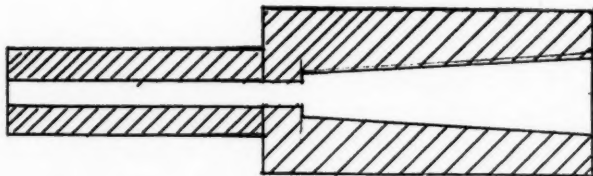
A device that I have never seen described in any of the literature is the "tube" for rounding the girdles of faceted gems. See sketch. One needs a series of these tubes, covering all dia-

eters of gems one wishes to cut. They are made of brass, with the recess machined to a pitch of about $1/8''$ per $1''$. Don't forget to drill the $1/8''$ hole through the arbor, as gems will often break off their lap stick while being "tubed" and this hole is required to punch them out of the tube with a stiff wire or small rod.

The gem is first roughed out with table and top and bottom pyramids, leaving a slight straight side between the top and bottom pyramids at the girdle. The gem is dopped on its lap stick, with no cement protruding beyond the girdle.

The tube should be roughed slightly inside and charged with 35 — 50 micron diamond powder mixed with oil. (Silicon carbide grains will not work as they grab the gem and break it loose from the stick). The tube is chucked and revolved slowly while the gem is pressed lightly into it. When a true circle has been ground it is polished to become the girdle of the gem. This not only gives a "finished" appearance to the gem, it also helps to prevent the crumbling at the edge that sometime takes place if the front and rear facets are allowed to meet in a thin line at the girdle, and it makes less noticeable any lack of register between front and rear facets.

The sintered diamond wheel for roughing out is of distinct value on all gem materials; it is almost a "must have" on



Sketch—Section through brass tube for rounding gem blanks.

chrysoberyl and corundum. Those wheels of 150 grit which are most readily available are entirely satisfactory. Especially on the hard materials they are fast cutting and they don't wear out of true as do the silicon carbide wheels. Be sure to use plenty of water on them.

The copper wheel charged with 20 - 25 micron or 35 - 50 micron diamond is the best rough faceting wheel available. Use a rolled copper disc approximately $\frac{1}{4}$ " thick by desired diameter. Be sure it is machined true. Score it thickly with the corner of a safety razor blade. (You are dealing with diamond grains of very small diameter — don't cover them all up in deep furrows). Smear uniformly over all the cutting area from $\frac{1}{2}$ - $\frac{3}{4}$ carat of dust mixed with oil. Rub it well into the copper with either a flat piece of agate about 1" diameter with rounded edges or a piece of steel with slightly rounded edge, such as the heel of a wood chisel.

Both scoring and rubbing are subject to great variation in thoroughness. One might "get by" with five minutes devoted to each operation, but it probably pays to continue each for fifteen minutes. Wheels with long and thorough treatment cut smoother and last longer.

Kerosene is used as lubricant and coolant. (Equally effective and easier then olive oil to wipe off the gem for inspection of progress).

When cutting action slows down too much, the wheel may be re-charged without re-surfacing.

A rolled zinc wheel is quite valuable used with diamond as a pre-polish cut. It does not pay (with medium hardness gems) on small facets, and each user must decide for himself where it should be used. But decidedly, on the main facets of practically all gems and on all facets of gems of five carats and above it is most helpful, yielding better work and in less time than if one goes directly from the copper wheel to the tin polishing wheel. Copper wheels even with very fine diamond dust tend to have a "tearing" action especially on tender materials, such as rutile, while the zinc wheel with diamond seems to have a smooth planing action. The zinc wheel should be as smooth as

possible, being surfaced with a round nosed tool and very slow feed. It pays to then scrape the surface as smooth as possible by holding a safety razor blade against the surface as the wheel revolves slowly. (This cannot be done after any diamond is applied to the surface).

The size of powder used is to be determined by the user. This writer prefers 5 micron powder. This wheel does not take a "permanent" charge, small amounts of the powder mixed with oil must be applied frequently. One touch of powder will usually cut several facets. Speed is not critical, but as the abrasive is loose on the wheel and the wheel is kept wet, the faster the wheel runs the more quickly will the powder be thrown off.

Buy only the best available diamond powder. Some makers are not careful about grading. This writer had trouble with scratches in polishing corundum and found that the alledged 5 micron powder had quite a few grains of up to 20 micron in it. These large grains naturally caused scratches.

A great deal of trouble is caused by a failure to realize what constitutes correct scoring of tin polishing laps. This writer struggled along for many years with laps improperly scored. In discussing polishing troubles with Mr. A. Epositer, (1) he expounded what was to the writer an entirely new conception of scoring.

Several methods are in general use.

1. Cutting radial lines in the face of the lap with a knife blade.
2. "Hacking" - that is, holding a steel kitchen knife loosely in the hand permitting it to bounce and dig pits in the lap as the lap revolves.
3. Scraping the surface with a piece of sandstone.

Mr. Epositer's method is to break a hack saw blade into approximately $\frac{1}{2}$ " lengths. Holding one of these lengths like a woods scraper he drags the teeth in nearly a radial direction over the lap, bearing down heavily. When the surface is thoroughly covered with the scratches, he makes another series of scratches, nearly radial, but crossing the original ones. The net result is practically a surface of "points and valleys" rather than of "hills

and valleys" as is the case when the scoring is done with a knife. Wash off the loose metal with a wet cloth as the lap revolves, paint with a thick paste of the polishing powder and proceed to use. It may be too rough to give a good polish on the first one or two facets, but first do partially two or three facets. By that time it will be in good shape and the partially finished facets may be completed.

A most impressive part of our discussion was the frequency with which he repeats scoring. He says *he may take a chance* and polish an entire five carat gem with *one scoring* but it is much safer to score *once for the back and once for the front* of the gem.

Many of us have been for a long time using fine diamond powder on tin or lead to polish corundum and chrysoberyl facets. It is a good scheme, but it can be made much easier with a "combination lap". The lap body is a disc of rolled zinc of any desired diameter but it should be at least 8" diameter. Machine in the face of the disc a recess, next to the spindle hole, the width of the recess being about 1/2 the radius of the lap. Pour this recess with tin or a mixture of part tin part lead. ("Strictly half and half" solder). Machine the surface flat across both metals, as smooth as possible and scrape still more smoothly with razor blade as already mentioned.

Apply fine diamond powder, either 1 micron or 2 micron, to both metals, using kerosene coolant as mentioned in the paragraph on zinc laps. Apply the gem first to the zinc section which will give the surface a very fine grind, then let the stone slide across onto tin which will give it an excellent polish.

The preliminary treatment consists first of faceting on the copper lap. If the gem is a small one it may be taken directly to the combination lap. However, all facets of larger gems and probably the main facets of the smaller ones, should be given an intermediate grind on the zinc lap with 5 micron powder.

No such paper as this one should ever claim to be "specific". The ideas are ones that look good to the writer, but it should be stressed that half the fun of gem cut-

ting is experimenting and thereby constantly finding better new ways to do old jobs.

(1) Mr. Esposito is one of the "genuine old timers", having been cutting gems for more than 50 years. He has been of great assistance to us amateurs. Many of the ideas in this paper were given the writer by Mr. Esposito.

Ultra-Violet Products Move

The Ultra-Violet Products, Inc., formerly of 5205 Santa Monica Blvd., Los Angeles, Calif., have moved their offices to 145 Pasadena Avenue, South Pasadena, Calif.

Three years ago the company built a new factory in South Pasadena and now they have moved their offices to the factory location and this consolidation will mean faster, more efficient service.

Ultra-Violet Products, Inc., are the manufacturers of America's most popular ultra-violet lamp—the Mineralight.

Lessens Job About Renewals!

Editor R & M:

Enclosed please find my check for \$6.00 for a two years renewal of your very fine magazine.

We enjoy it immensely, and feel that this will lessen your job about renewals.

PAUL O. DRURY
Las Vegas, Nev.

October 14, 1949

Packed With Information and Interest!

Editor R & M:

Allow me to say how much I enjoy *Rocks and Minerals*. As one who likes minerals and enjoys collecting but who lacks the knowledge of a mineralogist, I really find that the magazine is packed with fine information and interest.

RICHARD A. SANFORD
Lowell, Mass.

October 10, 1949

Error in Last Issue

In the last issue of *Rocks and Minerals* an unfortunate error appears on page 489. The two columns of text are transposed; the right column should be the left.

When the forms for printing were OK'd by the Editor, the two columns were in their correct position and not until the magazine had been mailed was the error discovered. The printers have not yet informed us how this blunder was made.

We are very sorry that this error appeared in Mrs. Wentworth's very fine article.

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CLUB AND SOCIETY NOTES

ATTENTION SECRETARIES—If you want your reports to appear in the March-April issue, they must reach us by February 20th—the Editor.

Georgia Mineral Society

Fifteenth Annual Meeting, Oct. 10, 1949

The Georgia Mineral Society assembled October 10 at the Georgia School of Technology for its fifteenth annual banquet meeting, with Capt. Garland Peyton, president, presiding. The Georgia society has grown from a nucleus of eight to nearly 300 members since it was organized in 1935.

Other accomplishments reviewed at the meeting included the establishment of a mineral museum now housed at Georgia Tech, publishing a State mineral catalogue, establishment of a night course in gemology at Georgia Tech, an earth science section of the Georgia Academy of Science, and a local grotto of the National Speleological Society.

Dr. Horace G. Richards, of the Philadelphia Academy of Natural Sciences, was the October guest speaker, his subject, "Quaint Corners of the United States." In addition to Doctor Richards' interesting description of the quaint corners, he showed kodachrome slides of five such unique places.

Clayton Lake, Maine, where only French is spoken, was one of the points pictured: the only way to enter Clayton Lake is from the Canadian border. A virgin beach, Tangier Island, Virginia, was shown, with its entrance-way from Maryland. The group also viewed slides showing the strip of Mexican land in El Paso, Texas. The uppermost point in the United States, Penassee, Minn., was pictured, surrounded by Canadian territory.

James Johnson, junior members of the Society, was awarded an attractive set of western minerals for his outstanding accomplishments in his collecting hobby. The award was contributed by William B. Osler, chairman of the junior membership committee.

Charles A. Wilkins Jr., was installed as president of the Mineral Society. He is the first man to join the group as a junior member and to attain the presidency. Other officers installed were H. L. Peterson, vice-president; J. R. Chapman, recording secretary; Erna L. Mason, corresponding secretary; S. P. Cronheim, treasurer; and Dr. Lane Mitchell, curator.

Gem Section Meeting

Members attending the Gem Section of the Georgia Mineral Society learned to distinguish between the many varieties of the yellow stone, popularly called topaz, at the October 17 meeting in the Blue Flame Room of the Atlanta Gas Company.

Donald G. King acted as moderator for a round table discussion of the November birthstone. S. P. Cronheim showed the members his splendid collection of 29 graduated topaz crystals, from the Ouro Preto district of

Brazil. E. E. Joachim displayed faceted stones of precious topaz in its different colors.

Field Trip — Oct. 23, 1949

Trailing the trilobite to its lair on a Coosa river bend near Rome, Georgia, was the principal feature of the October field trip of the Georgia Mineral Society.

Three new fossil localities recently discovered by Lewis Lipps, of Shorter College, were visited. Interesting specimens of horn coral, cephalopods, and crinoid stems were found by the field trip group.

ERNA L. MASON

Corresponding Secretary
State Health Department,
Atlanta, Georgia.

Santa Cruz Mineral & Gem Society

Santa Cruz Mineral and Gem Society has been organized with thirty-seven charter members. The following officers have been elected for the coming year: President, Wilson E. Thompson; Vice-President, Mrs. Robert E. Campbell; Secretary, Miss Betty Hay; Treasurer, Mrs. George L. Theobald; Directors, Jack F. Moore, George L. Theobald and Robert E. Campbell. The Club will meet every second Wednesday of each month in the Sequel Community Hall.

EDYTHE M. THOMPSON
Publicity Chairman,
Sequel, Calif.

Advance Notice—1950 Convention

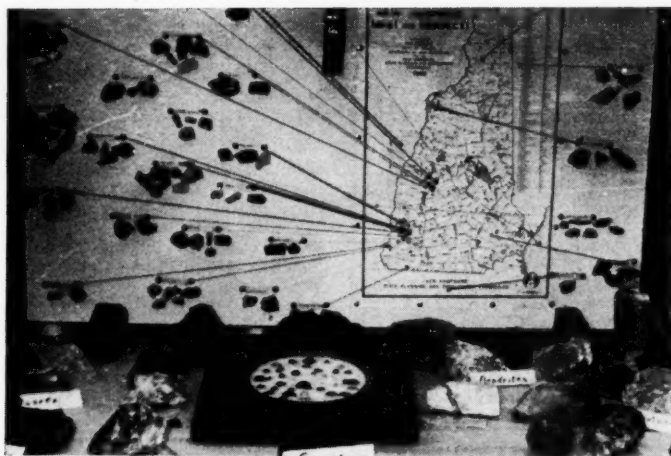
June 24 and 25, 1950, have been set as the date for the 1950 Annual Convention of the California Federation of Mineralogical Societies to be held at Valley Wells near Trona, California.

The dates for the first big out door meeting of the Federation were set by the Steering Committee at a meeting held at Trona, September 22.

Ralph Merrill, Chairman, and Modesto Leonardi of the Seales Lake Gem and Mineral Society, Ralph Dietz and Don MacLachlan of the NOTS, Rockhounds and Vincent Morgan of the Mojave Mineral Society represented the three host societies. Jack Streeter, president of the California Federation, was present and expressed his enthusiasm for the outlined plans.

Arrangements are already under way to supply plenty of camping space, comfort facilities, display and trading space, a big barbeque and many other features.

The committee hopes to make the 1950 Convention a real rockhounds paradise with plenty of field trips and trading opportunities.



Map of New Hampshire showing localities of minerals displayed by the Keene Mineral Club. (Made by Mrs. Julian Wetherbee)

Keene Mineral Club

The Keene Mineral Club celebrated its first birthday in July with a picnic and business meeting at Vilas Pool in Alstead, N. H. All officers were reelected unanimously.

We have 26 paid members, all active, and we feel we have had a very successful first year. We have been on 9 field trips and held 7 regular meetings and have put on 3 public exhibits. We hold meetings in the winter and go on field trips in the summer.

Our first exhibit was in the Simmons Jewelry Store window and consisted of gem materials from New Hampshire, all of which were collected, cut and set by members of the Club. This exhibit created quite a bit of interest as nothing of this type had been done in Keene before. The material was shown in the rough, as cut stones and as set in jewelry.

Our next effort was a booth at last year's Cheshire Fair for which we received second prize. A comprehensive collection of minerals was shown, also an exhibit of cut and faceted stones, a fluorescent unit and a gem cutting outfit in action which really drew crowds.

This fall we did a little better and rated first prize on our fair exhibit. The highlight of this exhibit was a map of New Hampshire with actual minerals so arranged as to show where they were found; made by Mrs. Julian Wetherbee. The fluorescent unit was the same as last year, made by our president Clarence Miller. Franklin Mack did an excellent job of display-gems and gem materials in a lighted showcase. A 'paw-it-over' display and souvenirs for the kids completed our display.

A photograph of the map display is shown above.

Our latest trip was to Harvard University museum (Cambridge, Mass.) where we saw the finest in mineral displays and were shown the workings of the laboratory by Dr. Frondel.

Our activities were socially and educationally a lot of fun and all committees enjoyed the wholehearted support of all members.

MRS. EMLEN P. PITFIELD

Secretary

44 Colony Court,
Keene, N. H.

Passaic County Gemological and Mineral Society, Passaic, N. J.

Passaic County Gemological and Mineral Society held its first fall meeting September 6, 1949.

Geology of Northern New Jersey and Lower New York has been discussed. Minerals of this area and where they can be found was also discussed.

Field trips to Scotch Plains and Andover Mine in July and August have been successful. The trip to the Andover iron mine, Andover, N. J. produced minerals as pyrite, apatite, marmatite, greenolite, magnetite, malachite, chalcocopyrite, and limonite. A little hard work from the members of the trip produced these minerals.

Mr. and Mrs. Andel and Mr. Taylor of the Newark Lapidary Club have been guests at this meeting. Mr. Andel is president of the Newark Lapidary Club.

The next meeting will be held October 4, 1949.

JOSEPH C. HANZL

Secretary

18 E. Second Street,
Clifton, N. J.

Pacific Mineral Society

Members of the Pacific Mineral Society took an armchair tour during their September meeting held at Old Dixie Southern Barbecue. Dr. Joseph Murdock, an Associate Professor of Geology at the University of California in Los Angeles, was the guide on the tour of "Pegmatites of Brazil and Scandinavia" and illustrated his interesting comments with colored slides. He is co-author of the latest edition of the State of California "Minerals of California" book, Bulletin Number 136.

The tour in color started with a shot of the ship ready to sail from New Orleans then continued to northeastern Brazil to visit the pegmatite areas which are numerous in that section. In order to reach the collecting areas it was necessary to help build roads in places that had washed out by the storms during the rainy season, as most all rockhounds have had to do at some time. This area is very similar to Southern California with the exception of the vegetation which has broad leaves. There is very little water available as they have a long dry season.

After arriving at the collection area in a very isolated section it is quite the common thing to find a native ready to help you hunt pretty rocks. They seem to appear from nowhere but always willing to help.

The hotel accommodations could be greatly improved as the furniture of the room is one shelf for luggage and two hooks in the walls to attach a hammock. The roads are the usual country roads with ruts and upon entering town there is usually one extra rough section just outside of town before the roads narrow and the pavement starts.

After a successful collecting tour and several beautiful donations for his collections, the trip continued by air across the Atlantic and up the coast of Africa with a scene of the deep blue of the ocean meeting the yellow sands of the Sahara Desert. The steep cliffs of the land could be seen clearly from 20,000 feet.

The tour covered the area from Latitude 22 south to 65 north Latitude. Arrival in London was at two in the morning and after a few hours was traveling again by air to Holland and Germany then to Scandinavia.

In Norway and Sweden there is no hustle and bustle of travel. It is all done in a leisurely manner. Much travel is done by water around the fingers of land which is easier than going over the top of the tall mountains. The boat will pull up at any place to deliver a package or mail or gossip and to let passengers on or off. It is not unusual to have boats meet in mid-stream to transfer passengers and mail or freight.

The Scandinavia section is a collectors paradise as it has some very rare minerals as well as the ordinary minerals with unusual elements.

Roy Martin had a nice collection of micro-mounts on display. Another feature of the evening were the colored slides taken of mem-

bers at the Sacramento convention in their '49ers costumes.

MRS. M. MUSSELMAN

Box 463

Lomita, Calif.

The Maine Mineralogical and Geological Society

The Maine Mineralogical and Geological Society opened its Fall Season on September 30th at 8:00 P.M., with a gala event. We were the guests of Miss Jessie L. Beach, our Junior Past President, at her new museum at 1247 Forest Avenue, Portland, Me. The members were all surprised at the taste with which it was decorated and arranged. This was the fulfillment of a lifetime ambition, for Miss Beach.

On the first floor of the museum is a reception room. Back of this is the mineral room with large cases full of beautiful minerals. On one side of this is the marine room, and on the other side, a small modern kitchen. Upstairs is a library of the various branches of natural history, a bird room and the Blue Room which is to hold the insects and butterflies. The walls of this room have been decorated with a frieze of the solar system. Different societies are to meet here, among them the Astronomical Society of Maine and The Microscopy Society.

We convened in the soft-lighted mineral room. President Timothy J. O'Connor called us to order and conducted the business session. There were 35 in attendance.

Our subject for the program was "Rocks". Mrs. Ruth H. Wentworth talked on "Igneous Rocks", showing specimens of equigranular rocks, these being granite, syenite, gabbro, diorite and peridotite. Felsitoid rocks shown were rhyolite, andesite and basalt. Volcanic specimens were obsidian, pumice, ash, and lapilli. Miss Beach talked on "Metamorphic Rocks", showing specimens of gneiss, schist, phyllite and slate. Miss Mary Robie talked on "Sedimentary Rocks". She told us of her experiences travelling through the state, finding many kinds of gravel, sand, sandstones, conglomerates, shales, etc. She showed us some beautiful specimens from Mt. Katahdin where the old iron mine is located. Some rocks had fossil shells in them. These must have been millions of years old.

After this, the members talked about interesting rocks which they had brought in. The discussion became lively and the reminiscences many, of where various rocks had been found. After the program, Miss Beach served us delicious coffee and doughnuts.

RUTH H. WENTWORTH,

Corresponding Secretary,

135 Maine Avenue,

Portland, Maine

Mineralogical Society of Southern California

Held its regular September meeting in the Lecture Room of the Pasadena Public Library at 8 p.m., September 12, 1949, with Mr. A. Grant Ostergard, President, in the Chair. A nice crowd was present, after the two months' Summer Holiday, and good fellowship manifested itself with the smiles and pleasant little squeals and gushing greetings of the ladies, while the men in all their dignity greeted each other in familiar fashion, and became interested immediately in tales of Summer mineral trips, and exhibited specimens.

Jack Streeter, our former President, who was recently elected President of the American Federation, and re-elected President of the California Federation of Mineralogical Societies, spoke first. He spoke of the various State and Regional Federations of Mineralogical and Lapidary Societies and of the American Federation, and touched on the recent Convention of the California Federation at Sacramento, where he mentioned that our own Society from Pasadena had won a spot on the State Plaque, as did our fellow members of Pacific Mineral Society of Los Angeles, many of whose members are mutual to both Societies. Mention was made of the splendid work of our members Willard Perkins, Louis Vance, and Earl L. Calvert, who contributed minerals for our display, which were arranged in the cabinets for display by A. Grant Ostergard, and his Wonderful little Wife, Dorothy.

Earl L. Calvert won a first place in Single Crystals; William C. Oke won first place in Micromounts, and second place in Locality Group. To all of these we owe a vote of thanks. We are proud to have them as members of our splendid Society; without them our place at the head of the list would not be so secure.

Past President P. E. (Gene) Linville and his lovely wife, made a trip this last summer up over the Alaskan Highway to Fairbanks and other points of interest in Alaska, including Dawson and White Horse. His talk was interesting indeed. It seems Mrs. L. last Fall or Winter became interested in an article about Alaska, which she was reading one evening while Gene was dozing over his evening paper, after one of her home-cooked meals. Full to the brim, Gene lay back comfortably in his arm-chair with the paper in position for reading, but between yawns he heard his wife say something, and he said: "Uh! Huh!" and that was his undoing, for what she had said was "Say, Gene, this is a wonderful article about Alaska! Why don't we go up there next summer?" Then followed Gene's "Uh! Huh!" and this summer he discovered where his vacation was going to be spent, and what he had promised on that night last Winter.

Their mention of Banff, Lake Louise, Jasper National Park, The Columbian Ice Fields, Athabasca Glacier, and other points of vital interest to Mineralogists, had a nostalgic ef-

fect upon our audience, and you may be sure many of them will follow on the Alaskan Highway later on when they get the opportunity. That is how the urge for mineral trips is born—hearing the other fellow relate his vivid experiences. Edmonton, Glacier National Park, Boston Peak, Fort Smith, and Dawson Creek. All these and many more set our wild imagination pulsating in high gear. I'm going up there myself some day. I'll take along some oil of citronella, too, for Gene's story of mosquitos was a warning. I'll need chains too, for his spinning and whirling experiences in the Alberta adobe black mud were also warning of what may be encountered on those bottomless roads in places, although he stated it was easy to make 50 to 60 miles per hour in others, the bad spots only about 15 mph. The road from White Horse to Fairbanks, he said, is lined with beautiful lakes and snow clad mountains, and wild flowers were gorgeous. 4600 miles one way and 4100 miles returning. Long distances between filling stations. Don't forget plenty of oil and gas and carry spare parts which may break—you'll be a long way from home if you go up there.

Don George introduced our Speaker, Walt Bilicic of the Engineers Syndicate Inc., 5176 Hollywood Blvd., Hollywood Calif., who gave us a nice talk on Geiger Counters, and demonstrated some of the late models. One machine looked like a large Television model, with a glass about 12 inches across the face, and in the center of this ran a band of green light, about $\frac{1}{2}$ to $\frac{3}{4}$ inch wide, from side to side, horizontally, and through this appeared thin hair-like groups of lines which curved upward from the bottom through the horizontal band and up toward the top, then turning sharply downward to the bottom again. These lines increased as the radio-activity of the specimen being tested drew closer to the Geiger Counter tube. At times the whole face of the machine or camera affair became a mass of green flame, the color of Uvarovite Garnet, as the radio-activity increased.

Scientific prospecting, said Mr. Bilicic, has replaced to a large extent the old method of guess-work formerly used by the old timers. He displayed a cabinet full of Uranium ores, including Pitchblende, Carnotite, Torbernite, Schroekingerite, Autunite, Tyuyamunite, the first being primary, the following secondary ores, and also the Pegmatite minerals, Uraninite, Euxenite, Samarskite and Monazite. His firm now rents these machines to Amateur Prospectors at reasonable prices, and we may soon expect valuable finds in new Uranium deposits at least in this country, if not all over the world. I see the Russians have now perfected an atomic bomb of their own, which they recently exploded. Let us not underestimate the Russians, whose chemical chart we are now using, for they too know a thing or two. Let us be on our toes and go out after more uranium ores, in every village and

hamlet all over this vast United States, because if we are to stay ahead in this atomic race, we have got to work and use our heads for something besides a hat-rack.

JOHN A. QUINN
Publicity Chairman
1090 N. Marengo Avenue,
Pasadena 3, Calif.

Newark Lapidary Society Exhibit

The first annual exhibit of the Newark Lapidary Society will be held at the Newark Museum, Washington Park West, Newark, N. J. from October 23 until December 4, 1949. Regular meetings of the Society are held at the Science Room of the Newark Museum on the third Thursday of each month from October to May at 8:00 P. M.

Chicago Rocks and Minerals Society

With summer vacations over, the Chicago Rocks and Minerals Society began its winter and spring program in September with newly elected President Herbert Grand-Girard presiding. Two Shell Oil Company films were shown. The films, titled, "Prospecting for Petroleum" and "Birth of an Oil Field", were both educational and instructive.

Mr. L. C. Aldrich of Chicago was the guest speaker at the October meeting. Mr. Aldrich gave a humorous and enlightening talk on "Old Silversmithing Methods". Methods employed before the advent of electricity and manufactured mechanical lapidary equipment. He imparted a valuable tip to the members on how to turn a bezel on a mounting that has no bezel plate by the use of dop to hold the stone firmly to the setting until the bezel is turned.

There was a considerable exhibit of fine silverwork done by the members on display. Of note was the exhibit of Mary and Clell Brentlinger which featured solderless silver mountings.

In addition to the guest speaker a Bell Telephone Laboratory film, "Crystal Clear" was shown. The film portrayed the electrolytic method of producing synthetic crystals that have the characteristics of quartz and play an important part in co-axial communication systems.

The open house sessions instituted by the Society a year ago has proven to be a laudable success and has contributed much to the general welfare and growth of the organization.

HELEN L. COOKE
Publicity Chairman
2952 N. Laverne Avenue,
Chicago 41, Ill.

Los Angeles Mineralogical Society

Held its regular September meeting at the Premier Cafeteria, 3716 Wilshire Blvd., Los Angeles, at 6:30 p.m., September 15, 1949, with President Frank F. Larkin in the chair. The meeting was well attended after the summer two-months' vacation.

Dr. Homer P. King introduced our Speaker, Edwin S. Roth, one of our own members, who delivered a very intelligent and concise talk on the copper minerals, specimens of which he exhibited in abundance. Mr. Roth knows his copper minerals and he spoke without notes never hesitating for names or localities, which flowed from his tongue as fluently as those of a trained orator, for his knowledge of his subject was almost unbelievable. I wonder how many more such teachers we have among our members who are now parading incognito meeting after meeting. We must find out and bring them out into the open. Mr. Roth exhibited beautiful specimens from Montana, more particularly Butte, of Covellite, Bornite, Chalcopyrite, Cuprite, Chalcocite, and from Michigan the pure native coppers so common to that region. He also showed us gray copper the Tetrahedrite group, and minerals from Arizona, Utah, and various other parts of the country and world. There were specimens of all kinds of copper minerals, from brown and black on up through the grays, greens, blues, and even white. Among his collection was a very beautiful and brilliant Chalcotrichite specimen. This, you may remember is the Plush Copper Ore, in capillary or acicular crystals, elongated in the direction of the cubic axis. It was what we commonly term a "Honey". We must call on Mr. Roth more often.

Ivan Mansfield discussed a spot of interest up the coast. This is a place where marbles roll up-hill, or appear to do so, and where one has to stand leaning over in order to maintain his equilibrium. His talk was quite interesting, and doubtless many will wish to investigate.

Our own Display Chairman, Herbert L. Fritts, spoke on the iron minerals, and displayed a nice table-full of specimens. When it comes to the nature of minerals and how they are formed, Mr. Fritts is in a class by himself. Geologically he has a firm base upon which to stand, gained largely through years of actual field work in the prospecting field. He is also an avid reader of subjects pertaining to Earth and Earth Science and his talks are always authentic and informative. I have some notes which Mr. Fritts gave me concerning his prospecting days throughout the West, especially during the famous Goldfield Days, and whenever I can find sufficient time to do so I intend to give you the benefit of some of these wonderful experiences of his.

JOHN A. QUINN
Treasurer,
1090 N. Marengo Avenue,
Pasadena 3, Calif.

Queens Mineral Society

A burst of activity—tables relocated—members bustling about with boxes, large and small—more rushing around and then, the exhibit was ready for inspection of the specimens displayed, and the usual remarks such as, Gosh, that must be a collectors paradise to get specimens like that! etc.

Mr. Daniel Black and Mr. F. Burkitt teamed up and exhibited the results of six trips to the Bedford, N. Y., area, and their trip to Pennsylvania localities. Almandite garnets of large size and outstanding XL form, Uraninite, Columbite, Molybdenite, Bismuthite, Bismuthinite, Phosphuranylite; From French Creek and Perkiomenville, Pa. Pyrite octahedrons and cubes, Antinolite, Chalcodite, Tourmaline, Epidesmine and Byssolite. Also Natrolite, Stilbite and Chabazite.

Mr. M. McKown, visited Westfield, Mass., North Groton, Buckfield, Cheshire and Franklin and exhibited specimens from each locality. Displayed were, Babingtonite XLS, Apatite XLS, Triphylite, Hexagonite, green Tremolite, Willemite and Calcite.

Mr. Allen Green visited the Cobalt district in Canada and exhibited excellent and rare specimens including, native Silver, Cobalt Bloom, Tetrahydroite, Cobaltite XLS, Galena, Sphalerite, Dolomite XLS, Niccolite, Safflorite, native Bismuth, Argentite, Aikinite and Breithauptite concluded the varieties displayed.

Mr. Pribil displayed some of the largest Amethyst XLS ever found in Prospect Park, N. J., as well as the following: Laumontite, Prehnite, Stilbite, Heulandite, Galena, Babingtonite XLS, Hematite and Chalcopyrite. From Summit, N. J., Mr. Pribil displayed specimens of Epidistilbite and Albite XLS.

Mr. C. G. Segeler visited Canada and many New England localities, and his efforts resulted in his obtaining some of the finest Diopside XLS we have ever seen. Specimens of the following were also displayed: Wernerite XLS, (of large size), Rockbridgeite, Autunite, Uraninite XLS and Montmorillonite from Palermo, N. H., Green Tremolite XLS, Corundum XLS, Oligoclase and Antozonite. Under a Mineralite, the Wernerite had a zone of blue that was intense!

Mrs. E. Marcin displayed the specimens gathered by herself and Mr. Marcin and as usual, we saw excellent specimens which resulted from their efforts. They displayed fine Siderite XLS from Roxbury, Garnets from Roxbury and Redding, Staurolite XLS from Roxbury, Columbite XL from Bedford, Albite XLS from Branchville, Allanite XLS from Hoadley Pt., Conn. Sillimanite from Hungry Hill, Gilford, Conn.

Mr. A. Koerber also visited Canada and various other localities which resulted in wide variety of excellent specimens of: Graphite, a Spinel XL (at least an inch across the faces!) of perfect crystallization, Sodolite, Apatite XLS, Moonstone, Ellsworthite, Diopside XLS, Kyanite XLS, Titanite XLS Tourmaline XLS

and Danburite.

Mr. T. Fredericks, who accompanied Mr. Koerber on his Canadian trip, related some of the experiences that were encountered in their travels. Mr. Fredericks also had many excellent specimens to display including: Scordite, Tourmaline XLS, Barite XLS, Allanite, Danburite, Beryl, Hydronephelene, large Titanite XLS, Apatite XLS and Nephelite.

A fine display of really exceptional specimens, presented a difficult task for the judges, who awarded two first prizes!

First prizes were awarded to Mr. T. Fredericks and Mr. C. Segeler.

Second prize was awarded to the joint exhibit of the Messrs D. Black and F. Burkitt.

Oct. 6, 1949, Meeting

Our regular order of business was dispensed with in order to make more time available for the feature of the evening, the Reynolds Metal Co., film "Pigs In Progress". The film dealt with all the phases in the production of aluminum, from the raw ore state to the finished product. Fabrication and utilization of aluminum in a wide variety of applications were shown.

The Messrs. George Reese and B. Downes, Reynolds Metal Co., representatives, held an open forum after showing the films and answered the questions presented by our members. At the conclusion of the question and answer period, they were accorded a rising vote of appreciation.

Field Trip Committee

Ted Fredericks reported that the field trip planned for September had not been well attended, and it was agreed to hold a trip to the same locality on the 4th Sunday of October.

Program Committee

Dr. Gregersen advised the members that a list of subjects of interest was being prepared. Suggestion of the type of features desired, was requested so that the features presented each month would meet with the approval of the members.

Dr. A. C. Walker of the Bell Laboratories, will present a 16 mm film and talk on the Growth of XLS for oscillators etc, at our November meeting.

Membership

Motion made by Curt Segeler was seconded by Bill Stadler, electing Mr. and Mrs. Woodward to membership, was duly carried.

Curt Segeler read a letter, from Bob Shephard, to the Society. It indicated that Bob was progressing very well in his chosen field of endeavor, and it also requested that the question of a Club Mineral Exchange be presented for our approval or rejection. It was pointed out that many minerals not available to us in this region might be obtained by this medium. The members expressed their desire to partake in such an exchange, and an examination committee will be appointed to determine if specimens presented for exchange are of acceptable quality.

Educational Program: Mineralogy No. 1.

Conducted by Ted Fredericks will start 1st or 2nd Tuesday of November.

Mineralogy No. 2. Conducted by Curt Sege-ler will start on October 23rd.

WILLIAM STADLER, Sec.
153-08 119th Avenue,
Jamaica, L. I., N. Y.

North Country Mineralogical Club (Plattsburgh, New York)

Arthur M. Sandiford, of the Champlain College faculty, was in charge of the program at the June meeting of the North Country Mineralogical Club. The speaker discussed the minerals found on the May 29th field trip to Lyon Mountain, as well as demonstrating and giving directions for the identification of minerals found.

In place of a field trip, a picnic was held on June 26th at the home of the club president, William R. Ellsbury, in Keeseville. Following dinner on the lawn, the group examined Mr. Ellsbury's large collection of minerals from the Champlain Valley region and of fine fluorescent specimens. During the afternoon, Mr. Ellsbury and Mr. Sandiford demonstrated the use of equipment for cutting and polishing minerals. Several club members polished samples of serpentine, marble, and pieces containing limestone and calcite. Some completed cabochons which they mounted on pins.

At the July meeting of the Club, Dr. Everett A. Manwell, of the Plattsburgh State Teachers College science department faculty, was the principal speaker. Dr. Manwell discussed the geology of Valcour Island, with special emphasis on the types of fossils to be found in the limestone there.

On July 24th, 40 people joined in the field trip to Valcour Island, located in Lake Champlain a few miles south of Plattsburgh, New York. Many fossil specimens were found, including trilobites, brachiopods, and gastropods. Scientists estimate that these primitive forms of invertebrate life occurred from 200 to 500 million years ago.

Philip Oxley, instructor in Geology at Hamilton College, Clinton, N. Y., was the speaker at the August meeting of the Club. During the summer, Mr. Oxley was doing research work in this section as temporary expert for the study of the Chazy Stratigraphy of Northeastern New York, for the New York State Geological Survey. In connection with graduate work he has been doing, he has made an especial study of bryozoans, small marine animals of which fossilized remains are found in the Chazy limestone formations of the Champlain Valley. At our meeting, Mr. Oxley outlined the geologic history of this region, illustrating his talk with colored drawings and diagrams.

The Chapel Pond and the Cascade Lakes regions, about 50 miles southwest of Plattsburgh, were the objectives for a field trip on August 28th. Members of the Adirondack Camera Club, of Plattsburgh, were invited to

join us for this trip, and several of their members attended. Visiting mineralogists from Iowa, New Jersey and Virginia also joined in the rock-hunting. In the stream bed of the North Branch of the Boquet River, near Chapel Pond, many specimens of labradorite were found. Later in the afternoon, many of those attending went on to the Cascade Lakes. On the hillside above the strip of land separating the two lakes, they found samples of finely-colored blue calcite, containing crystals of green diopside. This trip proved to be one of the most successful the Club has ever held.

Ernest F. Stevenson, instructor in Chemistry at Champlain College, had charge of the program at the September meeting of the Club. Mr. Stevenson discussed the chemical preparation of industrial materials from minerals. Some of the experiments performed illustrated the separation of lead and mercury from their ores, and the identification of calcite. At this meeting, also, tentative plans were made for continuing the series of supplementary study meetings held last winter, in addition to the regular meetings. A number of subjects for consideration were brought up.

On September 18th, the Club held a field trip to Whallon's Bay, on the shore of Lake Champlain, south of Essex, N. Y. This location offers several varieties of minerals, including limestone with calcite, calcite crystals, and porphyry. One fine specimen was found of quartz, containing the cross section of an especially large crystal of hornblende. Both the limestone and the porphyry found there are suitable for polishing, as are some of the "beach agates."

GERTRUDE E. CONE,
Secretary,
Keeseville, N. Y.

San Antonio Rock and Lapidary Society

The regular monthly meeting was held on the second Monday, October 10, 1949, which rounded out our first birthday as a society with 83 paid up members. The main order of business was election of officers for the coming year. Those elected are: Herbert D. Ohm, President; Warner Rascoe, Vice-President; Mrs. Rose V. Murphy, Secretary; Mrs. Margaret Rock, Treasurer.

Directors are: Richard M. Lawson, J. Spencer Baen, Raymond Rock.

The next meeting will be November 14, 1949; time, 7:30 P.M.; place, VFW Hall on Avenue B, and 10th Street. We cordially invite any and all Rockhounds who are visiting in our city on any second Monday of the month to come and meet with us.

MRS. ROSE V. MURPHY
Secretary
2903 Lombroso
San Antonio I-A, Texas

Mineralogical Society of Arizona

Among the odd relics of early Arizona are the old arrastras scattered over the state. They were devices built to grind ore and some were operated by water power. Arthur L. Flagg, president of the Mineralogical Society of Arizona, and superintendent of the state fair mineral department, announced at the recent meeting of the society that an excellent replica of an old arrastra had been built in front of the mineral building at the fair grounds by H. D. Richards, prospector and guide.

At the meeting, highlights of the summer's trips were given by members. Fred Burr, who with other members attended the convention at Sacramento, Calif., brought back a collection of rare California borax minerals. Tiny northupite crystals, he said had sold for \$15.00 each at the rock auction there.

Edna Andregg displayed fluorite crystals from Lordsburg, N. M., and Arizona calcite with phantom crystals and zinc cubes.

W. A. Anderson described a trip to New Hampshire where he saw golden beryl and aquamarine mined; and a visit to the Barton garnet mines in the Adirondacks of New York. The mine has been in the Barton family for five generations. It produces abrasives and rare gem stones.

In an old mine at Hillside, Arizona, Jim Blakely said they had discovered an important deposit of uranium, and deeper in the tunnels numerous other rare earth minerals.

A red ore with white, rosette crystals had not been identified and he said it might be one of the new minerals.

C. H. McDonald displayed a rock polished by glacier action, found near Flagstaff, revealing the little known fact that a small glacier had at one time passed through Arizona.

Ben Humphries, who is making a study of pegmatites, said that they often contain rare earth minerals. One can travel hundreds of miles in some areas and never find a pegmatite, in Arizona there are many veins of them. Bismuthite is one of the rare pegmatite minerals found in San Domingo wash near Wickenburg, Ariz. It is an attractive yellow mineral sometimes with copper coloring.

Moulton B. Smith told of the almost inaccessibility of many old gold mines in the mountains around Prescott, Ariz., and showed some fine specimens that he had brought out on horseback. A cluster of epidote crystals found in a prehistoric ruin near the Hassayampa river, he said, was evidently brought there centuries ago by one of the first rock hounds in Arizona. Mrs. Smith displayed a set of rock chimes from the Hazen Museum.

The best asbestos, said Fred McDonald and Johnny Weber, is low in iron content and can be used in electrical work. This summer they visited a mine producing that kind of ore, on the San Carlos reservation. While there they went to Peridot, Ariz. Asking a member of the reservation if they could

gather some peridot crystals, they received this answer: "We will take it up with the council and let you know—in September."

IDA SMITH
Press Correspondent
2010 W. Jefferson
Phoenix, Arizona

Pomona Valley Mineral Club

The September meeting of the Pomona Valley Mineral Club was held on September 13 at the Pomona College Chemistry building. Mr. Rogers, publicity representative for the Standard Oil Company of California, presented, in honor of the California Centennial, a motion picture which showed California's historical background and later development through a tour of the state with emphasis on the missions, important cities and recreational areas of the state, together with California's major crops and industries. As an added attraction, a short picture made up of excerpts from old time newsreels was shown.

Mr. Fred W. Kroeger was elected to the board of directors to fill out the term expiring in May 1950.

The new open house plan of the club was inaugurated when Miss Genevra B. Dow chairman, announced that the first would be held on September 18 at the home of Mr. and Mrs. Glen Weist in Ontario. These informal meetings are for the purpose of enabling club members to view the collections of individual members and to promote sociability in the club.

Mr. Kroeger concluded the meeting with a report on the Sacramento convention which he attended with President Smith.

NANCY L. TAYLOR
Publicity Chairman
845 Indian Hill Blvd
Claremont, Calif.

Texas Mineral Society

The Texas Mineral Society met June 14th, 1949, at the Baker Hotel. The following officers were installed for the year, June, 1949 to June, 1950: Mr. Thomas Copeland, 2007 West 10th Street, Dallas, president; Mr. J. D. Churchill, 1007 Fort Worth Avenue, vice-president; Mr. F. N. Bentley, 5319 Alton Street, Dallas, secretary-treasurer.

Meetings for the summer were suspended until the second Tuesday in October, 1949, because many members were away from the city during that time.

Our first fall meeting was October 11th, 1949, at the Baker Hotel. A colored film "Making Glass" by Libby-Owen-Ford Glass Company was shown, and specimens collected during the summer were displayed and discussed by various members.

F. N. BENTLEY,
Secretary-Treasurer

Los Angeles Lapidary Society

Twenty-five thousand people were not wrong when they visited the Los Angeles Lapidary Show and Picnic, held in Montebello, September 24th and 25th.

The Show was opened officially on Saturday by Lieutenant-Governor Goodwin Knight. Governor Knight, Mrs. Knight and daughter Carolyn spent the afternoon viewing the exhibits. It was very gratifying to see so busy a man enjoying the show even to the most minute detail.

There were 63 show cases filled with Los Angeles Lapidary Society members displays. The following societies displayed as our guests: Victor Valley Mineral and Gem Society, San Fernando Mineral and Gem Society, San Diego Lapidary Society, The Delvers, Glendale Lapidary and Gem Society, Hollywood Lapidary Society, Old Baldy Lapidary Society, Orange Coast Mineral and Gem Society, Pasadena Lapidary Society, San Diego Mineral and Gem Society, San Gabriel Valley Lapidary Society, Santa Monica Gemological Society, West Coast Mineral Society, San Pedro Lapidary Society and Gem Cutters Guild. These displays giving every gem polisher a treat to be long remembered. From morning till night the spacious exhibit building was filled to capacity, our only regret being that some people could not view the gems as good because of the crowded condition.

Jewelry making, all phases of cutting, polishing and faceting were continuously being demonstrated, and the commercial exhibits were well patronized by members and guests. A square dance Saturday night was enjoyed by many dancers and spectators.

The largest black Star Sapphire in the world, "Star of Queensland" (733 carats), was flown here from the east especially for this show. Our thanks to Kazanjian Bros., for this special courtesy. Four other large polished Star Sapphires, four in the rough, the largest Black Opal in the world, and a 200 carat faceted Aquamarine gem made up two show cases valued at \$1,500,000.

Sand Casting by Clemente highlighted the Sunday Program. The large crowds viewing the demonstration appreciated the unequalled talent of teacher and jewelry maker Clemente. It is little wonder so many people enjoy their lessons and learn so much under his guidance.

To see the large show building and spacious grounds with its picnic tables filled to capacity for two days, was very heart warming to the members that worked so hard to give their many friends a show really worth spending a day to see. All this makes up the best show the Los Angeles Lapidary Society has ever given.

TED SCHROEDER
Corresponding Secretary
8916 S. Manhattan Place
Los Angeles 47, Calif.

Mid-Coast Mineral Club

The meeting at the Pacific Museum in Shell Beach, Calif., Tuesday evening, September 20, 1949, by twenty mineral enthusiasts resulted in the organization of the mineral club for the California Mid-Coastal area, with the adoption of the name, Mid-Coast Mineral Club.

The organization selected Walter Nielsen of Fair Oaks as temporary chairman; Fred Wolff of Halcyon as temporary vice-chairman; Constance May Goth of San Luis Obispo as temporary secretary.

A regular study course was inaugurated and lapidary classes under the Arroyo Grande High school adult education program will be part of the individual club members activities. Field trips are being planned and locations are now being actively scouted.

One of the tenets of the embryo club is informality. All those interested in any phase of mineralogy or gemology are invited to join.

Pomona Valley Mineral Club, Inc. Pomona, California

The regular meeting of the Pomona Valley Mineral Club was held October 11, 1949, in the Pomona College Chemistry Building with President Smith in charge. During a short business meeting there was a discussion of a field trip to be held to the Cady Mountains on October 16. Announcement was made of the open house on October 23 at the home of Mr. W. E. Lasley of Pomona.

The program consisted of a semi-annual auction of specimens donated by members for the benefit of the club treasury and to provide a fund to buy door prizes. Under the able management of Auctioneer B. W. Cahoon, members were persuaded to part with \$46.55 making the auction quite successful.

NANCY L. TAYLOR
Publicity Chairman
845 Indian Hill Blvd.
Claremont, Calif.

My Mineral Activities for 1949 Season (Continued from Page 596)

just completed a fine detailed geological map of Newry and a report of its minerals, which will be issued soon.

Our specialty—Oxford County, Me., is still a collectors' paradise; very active this Summer for the miner as well as the mineral collector and will be more so next, as more and more pegmatite localities are going to be worked for beryl.

So while we did not get to as many quarries as often as we have in past years in this county, we did not neglect our hobby and did get around.

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MIMETITE v. CAMPYLITE, Cumberland. Orange xls. on rock. 2x1 1/4 ..	1.50
CASSITERITE, Catron Co., N. M. Micro. xld. w. Hematite. 2x2	2.00
CASSITERITE, Cornwall. Well xld. on rock. 3x2 1/2x1 1/2	5.00
COVELLITE, Alaska. Pure xlline. fibrous mass. 2x1 1/2	1.25
ANGLESITE, Sardinia. Excellent 1/2" xl. in Galena. 2x1 1/2x1 1/2	5.00
DUFRENITE, Gartersville, Georgia. Radiating, partly Limonite. 2 1/2x2 ..	1.50
ARGENTITE, Silverton, Colo. Crudely xld. mass w. Quartz. 3x2	2.50
QUARTZ v. SMOKY QUARTZ, Switzerland. Very fine xl. found in 1868. 3 1/2x2x1 1/2. Translucent.	7.50
WOLFRAMITE, Tayu, China. Pure cleavage mass. 2 1/2x2. (9 oz.)	2.00
DIOPTASE, Kirghese Steppes. Well xld. on rock. 2x1 1/2	12.50
QUARTZ v. SMOKY QUARTZ, N. C. Xl. group w. good bubble . 2x2x2 ..	3.00
CELESTITE, Sicily. In brilliant transparent xls. w. Sulphur. 4x2x1 1/2	3.00
MILLERITE, Siegen. Xld. and xlline. mass. 3x1 1/2	3.00
AXINITE, Franklin, N. J. Yellow xlline. mass w. some Hedyphane. 2x1 1/2 ..	1.25
LIROCONITE, Cornwall. Xld. in Quartz. 3x2. Found before 1810.	7.50
PHARMACOSIDERITE, Cornwall. In distinct green xls. on matrix. 3x2 ..	3.50
AZURITE, Chessy, France. Group of large compound xls. 3x2 1/2x2	7.50
CHABAZITE, Paterson. Small cream-colored xls. on rock. 3 1/2x2	2.00
ANALCIME (ANALCITE), Paterson. Well xld. on rock. 4x3. Very good ..	3.50
THOMSONITE, Paterson. 2 3/4" hemi-spherical xld. mass on rock. 4x2 1/2x2 ..	6.00
CALCITE, Egremont, Cumberland. Colorless xls. on Hematite. 4x3	3.00
HEMATITE, Elba. In large splendid black xls. 3x3x2	4.00
EPIDOTE, Alaska. Mass of small xls. up to 1/2" w. some Quartz. 3x2x2 ..	3.00
AXINITE, Bourg d'Oisans. Xld. on rock. 3x2. A fine "old timer".	10.00
ATACAMITE, Burra Burra, Australia. Group of remarkable large xls. up to 1 1/2x3/8", in specimen 2x2 1/2x2, no gangue.	7.50
FLUORITE, Weardale. Group of bicolored xls., greenish and lilac. 3x2 ...	2.50
DIASPORE, Chester, Mass. Well xld. on Emery. 2x2	2.50
EPIDOTE, Untersulzbachthal. Group of doubly-terminated xls. 3x1 1/4 ..	12.50
CHRYSOBERYL, Topsham, Maine. Xl. masses in matrix. 3x2 1/2x2 1/2 ..	3.50
FLUORITE, Mexico. Light green octahedral xls. w. drusy Quartz. 5x2 1/2 ..	7.50
CORUNDUM, Transvaal. Pink pure xlline. mass showing cleavages. Fluor- escences brilliant red under long wave U.V. 4x2x2	3.50
CALCITE, Joplin. Golden twinned octahedral xl. 5x2x2 1/2. Good.	3.00
CHALCEDONY ps. after FLUORITE, Havana, Cuba. Whitish on rock. 3x2 1/2 ..	2.50
DOLOMITE, CHALCOPYRITE and SPHALERITE xld. on rock, Isle of Man. 5x3	3.00

SOME LOOSE CRYSTALS

APATITE, Ontario. Doubly-terminated reddish brown xl. 2 1/2x1	1.50
do. Snarum. Large opaque white xl. 2 1/2x1 1/2	2.00
PYRITE, Elba. Large pyritohedron, brilliant. 2 1/2x2	3.00
STIBNITE, Japan. Brilliant finely terminated xl. 3x1 1/2"	3.50
LAZULITE, Graves Mt., Georgia. Large crude xl. 1 7/8x1 1/4	2.50
HEMATITE, Brazil. Brilliant xl. 1 1/2x1 1/2	2.00
SHEELITE, Aldridge Mine, Kern Co., Calif. Translucent 7/8" xl.	2.50
ZIRCON, N. Carolina. Large (1 1/2") reddish xl. Fl. under LW.	2.50
CUPRITE, Chessy, France. 1/2" dodecahedron, slightly altered on surface ..	2.00
THORIENITE, Ceylon. Ten small xls. in Riker mount.	2.00
CASSITERITE, La Villeder, France. Brown twinned xl. 1 1/4"	2.00
TOURMALINE, Gouverneur, N. Y. Reddish-brown highly modified xl. 1 1/2x1 1/4	2.50

HUGH A. FORD

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No lists furnished, but enquiries for specific minerals welcomed.

